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ADDRESSES AND ORIGINAL ARTICLES

THE MEANING OF LIFE.*

BY DR. ALFRED ADLER (OF VIENNA).

THE problem I want to discuss to-night is a very old one. Probably human beings have always asked such questions as: What is life for? What is the *meaning* of life? Perhaps they have said that life has no meaning at all. You hear it still in our own time. If, however, you do not only *ask* but *look* for the attitudes and the behaviour of human beings, you will see that they act and re-act, answer and behave, according to a certain meaning, although for the most part they know nothing about it. We find them living as though they believed themselves to be pursuing certain aims, and this is very understandable, because we are not moved by the real—in the sense of material—facts of the world, but are impressed by the *meaning* we give to them. That is what leads us. Thus we sometimes find ourselves in a realm of uncertainty because no one has told us rightly what is the *meaning* of life. Everyone has to work it out in the darkness of his own mind. We are learning life. It will be wise, therefore, to look at it from the scientific angle.

The Question.

This is not so simple as you may think, because I do not know of any scientific inquiry up to now into this problem. I have heard questions and answers but never have I seen a real scientific inquiry. It is very true that such a question cannot be solved only by reference to immediate experience. There must be a leading idea to which that experience can be adapted. We have therefore to guess, as every scientist has to guess. He is not blessed with absolute truth. In such a very important question as we have now before us, we must approach with great caution and with a great reverence, because we may be sure that if anybody fails in this way, and does not attach the right meaning to life, the failure will appear in his whole-make-up. He will meet the problems of life and try to develop himself towards a goal which does not agree with the right meaning of life. We suspect that many failures and mistakes are really based upon a wrong meaning.

In solving such a question it is often a great advantage to introduce another question; not to go direct, but to make a detour and besiege the problem. We may, for instance, raise the question: What do we find in our life when we enter this world? The answer is: The contributions of our ancestors. These contributions exist; they are living, they cannot disappear. We take them up and continue them, we complete them, but they are always present and always living. This gives us a hint that probably our human life contribution must be a great part of the meaning of life itself. It is always existing, it does not die out. We find it in works, children, ideas, traditions, Art. All these results of contribution live for ever so far as mankind can utilise them, is improved by them, can take advantage of them, and be developed by them. Therefore, if we are looking for the meaning of life, we find it in the first place in the fact of contribution.

Let us, however, be sceptical towards ourselves and cruel and hard. We are not satisfied. Even if we seem to be convinced, it may not be so, and therefore we must attack what we have found in this matter of contribution from other sides. Perhaps we can turn the question and ask: What happens to the lives of people who have not contributed? They disappear; there is no place for them in human life. This is the underlying idea of Individual Psychology. An unwritten law, the logic of life, rises up against such lives and says: Get away, we do not need you, you are not fitted to this life, you do not contribute.

So, you see, there is a value in a certain idea of human life and probably many people's traces have perished because they have not contributed. They could not "fix" life on this earth, they have not created, they have not coöperated, and so they have not found what can be found only in contribution—the right adaptation. So we feel a little more sure. There must be something in our human life which means to contribute, to coöperate.

Coöperation: Mother and Child.

We want, however, to be more and more sceptical, and perhaps we should also ask the question: If it be so that contribution and coöperation is the right scientific meaning of life, must not human beings have all sorts of ways of coöperating and contributing and must not their functions be right, normal, and worth while if they are to be equipped for accomplishment in the way of coöperation? If we press this point of view, we may find that we are in doubt. We see that the child is born into this world with all the organs which are adapted towards another person. That is quite obvious. He has thirst, hunger, the reflex to suck, he needs the breast of the mother. He is equipped to accomplish in this way, to coöperate in this way. It is his only little part. If we remember the weakness, all the long time a child needs to grow up and become independent for contribution and coöperation, there must be somebody present with whom he can coöperate. Now you know the first person for this coöperation is the mother, and therefore we have to point out the great importance of the mother for the development of ability to coöperate. The skill and interest of the mother make the child socially interested in her. It is going on every day, every hour. Everybody knows it who has seen it, how the mother provides for the child. Water, climate, the air in the room, and food are all interferences which make the child more or less coöperate with the mother. The mother can make a mistake in this way, as we know, by stopping the ability to coöperate in the child, binding it to her alone and not giving way so that its social needs can be spread towards the father, if she pampers the child and pets it and makes it dependent on her alone. We see the importance of the father in the same way and so, slowly growing, the social interest of the child from coöperation with the father and the mother to coöperation with other children, and we have the family.

The family is the field for training the child in coöperation, and therefore we see how the institution is found to function in a general way to teach how to coöperate. This is very obvious. Now let us look at the physiological functions of the child and what they mean, in a psychological way. What does it mean to look? It means to connect oneself,

*A lecture delivered to the London Branch of the International Society for Individual Psychology, at University College, London on Jan. 15th, 1931.

in looking, with another person or thing. It means a connexion. When we see, our eyes are functioning rightly only if we are socially interested, and we find among many children and grown-ups that they do not coöperate with their eyes, they do not look straight, they are not interested. We speak of a "hang-dog" or a "vacant" look, and we know the queer look of an insane person, interested only in himself. If we judge rightly, we shall find the degree of coöperation from how a person is looking. We act in a sympathetic way, and we do not like a certain look if we do not find social interest in it. We know the "dirty" look, the look of the criminal, and so on, and we judge, without knowing it, the degree of coöperation. We do not mean "looking" merely in the physiological sense of collecting pictures and leading them to the brain. What interests the psychologist is the degree of coöperation, and we understand the great importance of it because it means the whole understanding of a child if he is looking in a coöperative and interested way.

The same results will be found if we investigate in regard to listening and you can understand the little progress made by a child or by a grown-up if he does not listen interestedly, if he is not attentive, and does not connect himself in hearing sounds and words and so on, and we know how important it is for the development of one of the most important functions of the human mind—that of speaking.

Coöperation: In Social Life.

What does it mean to connect one person with another? It is the basic element of our speech function, and only such persons can speak rightly who have understood how to connect with others and to express themselves in such a way as they would like everybody to connect in speech, to express themselves in a way that others can understand, and so on. We see the development of all our sense organs can happen only if the child is socially interested; his goal is to be connected with others, and to coöperate and contribute. If he feels a part of the whole, if he feels at home upon this poor earth crust, if he wants to develop, to help to contribute, and to coöperate, then he can develop his functions rightly. What does "rightly" mean? We measure all this in regard to the welfare of the whole of mankind. We would never call anything *worth while* if it were not worth while for the whole of mankind. Normal, right, true, and so on, are things we instinctively say when it is in the direction of the welfare of mankind. For this everybody has to coöperate and to contribute. These are the primitive functions of human beings and they cannot be rightly developed if such a person is not interested in the whole and does not feel a part of the whole. In the same way, we find all the characteristics are developed in the right way only if there is a certain degree of social interest.

What do we call characteristics? These are social relations. To be *good* means to be good towards others, and to be *bad* means to be bad towards others. To be interested in Art we need a social interest; to be lazy means not to contribute or coöperate; just as to be industrious means the contrary, and so on. You cannot find one characteristic which does not mean a social relation which can be measured. "Courageous," for instance, is a quality that exists only in regard to the welfare of mankind. We do not find courage without social interest, and when we speak of a wrong development we mean that we do not meet with ability to coöperate. We cannot speak about morals and ethics without making it obvious that we mean coöperation and interest in others. Wherever we find that man is culturally at a certain stage, he has to grasp the ideal of coöperation. We know the meaning of life that we can develop ourselves only if we coöperate and are trained in contribution. On this point we can also answer the question we hear very often: Do we develop the individual for himself, or for mankind? Now you see you *cannot* develop the individual without developing him for the welfare of mankind, and if a person develops his ability of coöperation, he develops his listening and speaking and right understanding. Our understanding, our common sense, our logic, can be strengthened and developed only in a social environment. It is based on these senses and functions of listening, looking, speaking, and so on, and our understanding is not in a proper condition unless we would understand in a way that can be controlled by the whole of mankind and as we would expect everybody to understand.

That is common sense. Understanding can be developed only if a person is socially interested. We say that failures have no common sense. They are not stupid or feeble-minded; they conclude readily but not in the way of social interest. Even in regard to our æsthetic feelings we clearly judge Art by whether it is in the way of the meaning and welfare of mankind. Nobody has ever called something beautiful which was not in the line of development and improvement of mankind. And especially anything which we call beautiful in regard to human beings looks towards the future, it carries the idea of children, the tendencies of what we want mankind later on to be, and so on.

So we see our functions and feelings are developed rightly if a person is concerned about the whole of mankind and feels the need of *coöperation*. We know that the child starts with a feeling of inferiority; he feels little and down and he strives to overcome it. The only right way to overcome this feeling of inferiority, which involves everybody, is to feel *worth while*, and he cannot do so if he does not coöperate. Therefore he cannot get rid of this feeling of inferiority.

Happiness and the "Pleasure Principle."

And here is a point that I want to mention shortly. It is often said that human beings are governed by the "pleasure principle." Many psychologists and psychiatrists, however, are sure that this is not true. Human beings strive for the *happiness* of others; this is the true pleasure of the socially interested person. The "pleasure principle" is the striving of a person who is only interested in himself and not in others.

Perhaps now we feel more quiet and sure that we are on the right way. There must be an underlying idea in our life, a *meaning*, a metaphysical background of our life, which means coöperation. You will see that mankind always keeps instinctively to this viewpoint and you do not find any religious system which does not say "Coöperate; love thy neighbour." This is generally a religious explanation, and if we can find a scientific explanation I believe it will help for the improvement and benefit of mankind. Perhaps we are not yet wholly sure; we want to be more sceptical, and so we ask another question. If it be really so, that the meaning of life is coöperation, then must not all our problems be problems which can be solved only if we coöperate? This is another interesting result of Individual Psychology, so that we can insist that human beings never meet anything but social problems in life, which demand a right preparation for coöperation.

The Family Relation.

I spoke before about the meeting of the new-born child and the mother. Now there are other problems, small and great, in the life of the human being. Another child comes into the family and how this child behaves to the other proves his ability in coöperation. We are scared to see how many children grow up without this ability to coöperate if a new child comes into the family; how they resist and want to exclude the other child; they feel hurt and timid and do not want to coöperate, and so on. Later in life, to be sure, the child enters the kindergarten, nursery school, or public school, and always he meets a social problem. He meets other children there and the teachers, and discussions take place which are to lead towards his later profession and occupation, whether he is to be useful in the division of labour for the sake of the whole of mankind. All these problems therefore are like examinations. We can see how a child behaves in his little problems: if he wants to join other children, if he has friends and comrades, if he is interested in his work, if he can play with other children—in all these ways we find how far he is prepared in coöperation.

We are always looking for reasons why so many children, and later on grown-ups, are not rightly prepared, but this I will describe later. After the school he enters the social life, gains friendship, and a family, and he has to meet and to compare with other persons. In all these relations we find people behaving differently and if they behave rightly or, as we say, normally and intelligently, they are interested in other persons, they can coöperate. This is the social problem we meet in life. There is the problem of occupation. We have to be useful and to coöperate in the division of labour, and not believe that we are working for money. We really can earn money only if we coöperate. Otherwise we have failure in life—crime, for instance. We are paid, then, because we coöperate. The problems of society, friendship, comradeship, problems of occupation, are bound up to a certain degree. There are other problems, such as the problem of love.

The Sex Relation.

Because we are living in two sexes there must be a certain coöperation between them. In this matter mankind has felt, and feels now, that there is not the right coöperation because we are not skilled and trained and prepared. We read books which mostly are stories of unhappy marriages and love affairs, and we are impressed with the great difficulties. We are not prepared to coöperate rightly with the other person, and the problem of love demands that we should be interested in the other person more than in ourselves. This problem must be solved, and we understand that there must be such an underlying ruling idea in our lives that the meaning of life is to coöperate. We have no other problems in life.

I would be very thankful if somebody would mention a problem which does not demand social interest. We are in a trap, we cannot get out of it, and there must be a meaning of this trap. Its meaning is to coöperate. But perhaps we still want to doubt. If this is not right, it must appear in what we call the failures of life. What are failures in life? We can mention some types of failure—problem children, neurotic persons, psychotic persons, criminals, prostitutes, suicides, drunkards and morphinists, sexually perverted persons, and perhaps you know more.

The Failures.

Now in all these cases, if we are right, we shall expect to find a lack of ability to coöperate and really we do find it. We call them failures because they do not coöperate. The problem child does not contribute and therefore we are not contented with him and we want to change him so that he will coöperate. Now again we meet the same problem and the same meaning of life in the problem child and in neurotic persons. They do not coöperate; they want others to coöperate. The members of the family and the doctor should coöperate, and they will indulge, indulging and exploiting the coöperation of others, recognising the idea of coöperation—for the others.

That psychotic persons will not coöperate because they are not socially interested in others is so obvious that I do not need to speak about it. That the criminal will not coöperate is also very obvious. On the contrary, he wants to avoid coöperation and that is an easier way because he has not the characteristics of a socially interested person, which are courage and optimism, self-confidence, patience, and so on, not to be afraid of defeat, facing the difficulties of life. The criminal has not these. He is not prepared, therefore. To touch one of the most important questions of our time, I would say he is not guilty. He cannot pay what is demanded. We have to prepare him if we want to do something in regard to crime. On this point I want to say a little word in regard to determinism and indeterminism. If the child is built up for four or five years his style is fixed. This child—or later this grown-up person—can act only along the lines of that style and can change it only if he has understood the lack and mistake in his style. He has not the right meaning of life. The problem child has a meaning of life, that others must submit "I have to rule." That is the meaning of life for the problem child: "I must have my own way."

The neurotic person has a meaning of life: "the *others* have to serve and contribute." The criminal has a meaning of life: to have an easier way of earning his living, for instance; not the way of coöperation. The drunkard has a meaning of life: to escape from time to time from the problems of life where he should coöperate, always because of the fear of defeat, and because he is not sure of success. And you can see, if all the failures in life can be made more self-confident, more courageous, more interested in coöperation, they will be changed. You find the same among sexually perverted persons. They reverse the meaning of life, mostly culminating in this idea—not to be interested in procreation, the welfare of mankind, and so on.

So we see the failure has always a mistaken meaning of life: not to coöperate. Among these failures we see some interesting characteristics which may lead our understanding further. For instance, all these failures are sensitive, high-tempered, affective. They are angry, they are timid, they have all the emotions very visible, very obvious, and we can understand they are not adapted; they do not feel a part of life and of the whole. They feel always irritated and are always irritable, and we can understand it, because they are not living in this world, which means to coöperate; they have another idea of life, another meaning, and therefore they are sensitive.

They are always impatient because they are sure that their success is in danger. They do not feel

strong and courageous in life. This is what we find among problem children, neurotic persons, criminals, suicides, all persons who do not find a meaning in life. They will even write in a last letter: "Life has no *meaning*, and therefore I kill myself." *They are timid.* Even criminals, you see, are cowards. We cannot be fooled by them because we have seen them escaping the social problems of life, occupation, and so on. We are sure they are not courageous, and you can see in the very structure of their crimes that they are cowards. They seek isolation, darkness, they have weapons against unarmed men, they surprise another person, and so on. They are in a majority when they attack, and so we cannot agree that they are as courageous as is sometimes believed. Theirs is always the attitude of the coward. Their characteristics agree with what we have explained; *the mistaken meaning of life.* They are also pessimistic. They do not look to the future, are not interested in the future of mankind, and are always looking for *pleasure* and not for *happiness.* So again in the failures; we find that they have failed in finding the right meaning of life which means coöperation.

Heredity: Environment: Education.

Now to another question: Whence comes this ability of coöperation? Is it an inherited instinct? Is it inborn? *That* is not possible, because, especially in regard to characteristics, we see how they must be *worked out* and *accomplished*, and how they always involve social relations which do not exist before the child is born. We have seen that we can prepare persons and correct failures and make persons more socially interested if they are convinced, as we seem to be convinced, that coöperation is the right meaning of life. Therefore it cannot be an inherited *entity.* That there must be an inherited *ability* we cannot question, because we cannot develop anything for which we have not an inherited ability. This seems to me to be not great science but commonplace.

And now perhaps also environment. Environment does not matter in this regard. We try to interfere in the right way and impress the child in such a way that he becomes trained in social adjustment and coöperation, but we are not wholly sure if our interferences really work rightly. We must look beyond this argument and adjust our interference and coöperation. We must look for the results and we must interfere in the results. And on this point we say that it can only be done by education: education in the broadest sense. Therefore such an explanation as this of to-day means putting back education on its right throne again, against all other views, against the views of heredity and environment. We are responsible, we educators. And we say that ability to coöperate *can be and must be trained.* It is as with a subject like history or geography. If a person is not *trained* in geography, and would solve a geographical question, you will see that he fails.

There is another aspect. As long as a person is not tested in regard to his ability to coöperate, for example through being in a favourable situation where he is not confronted, you cannot be absolutely sure in regard to his degree of coöperation. On this point we begin to understand why, for instance, in hard times people reach the limit of their ability to coöperate. Suicides increase, crime increases, the neuroses and psychoses increase, because the ability of coöperation stops at this point; it does not go further. If a person is tempted too much, so far as we can see in our time there are many persons who, if they were tempted, would show that socially they were not rightly prepared. Therefore we say always that the failures reach a certain point which is the crucial point. It is their test examination. At this point it appears that their preparation for social adjustment is not rightly accomplished.

I have touched on the problem of training. The mother begins, the father has to continue, and the other children and circumstances from outside. You can see how prejudices may hinder the development of social adjustment, and how poverty, misery, sufferings, imperfect organs, and sickness, may make a child more interested in his own person than in others. The greatest part of failures we find springing from pampered *dependent* children because these children are more interested in themselves. They want to exploit others, to appropriate the others. They want to utilise the coöperation of others, and they do not feel strong enough themselves in facing a certain social problem. When they have to face a problem it appears in their whole behaviour and attitude that they do not feel prepared. They do not feel able—and so they express it—to solve this problem. I have called this the *inferiority complex*, and you find many failures have expressed failure to solve the social problems. We understand now why they do not feel able; because they are not trained in coöperation, they have not enough social interest. Now the child's inferiority complex may be like a stimulus. But the dependent children do not try to compensate this feeling by feeling worth while. They have *excluded* this way of coöperation, and therefore they are looking for a goal of personal superiority where there is a feeling of being more than others; for instance, the urge to oppress others, to kill others, to deprive others, to make others unhappy, and torture others, to disesteem others, to resent them, and so on. You find it in all the causes of failure I have mentioned, that they are striving for a superiority, a personal superiority, which is not useful for the whole of mankind. And this goal of superiority they do not find in the power of coöperation. And so, may we not say that on all points we can prove that the meaning of life must be for the greatest part coöperation? And now we have to make it living.

LANCASTER INFIRMARY.—Lady Ashton, widow of Lord Ashton, who laid the foundation-stone of this hospital in 1896, recently opened extensions, including a maternity ward, a children's ward, and additions to the nurses' home, which have cost £25,000. A war-time building, erected for munition workers, is shortly to give place to permanent wards, and the entire scheme will cost £75,000.

HEREFORDSHIRE ISOLATION HOSPITALS.—After a comprehensive survey of the isolation hospital accommodation in Herefordshire, the county medical officer, Dr. Peter Lowe, reports that the present system of small fever hospitals run by various authorities, while others contract with neighbouring bodies, is inadequate and recommends its supersession by the erection of a central hospital managed by a joint hospital board. The hospital belonging to the borough of Leominster is strongly condemned. It is a small wood and iron building, in need of painting and repairs; the water-supply is from a pump used by neighbours, and there is neither a telephone, a mortuary, nor a disinfection room—an old cab is used as a disinfecting chamber. Hereford city isolation hospital is of wood and corrugated iron; the scarlet fever block is antiquated and decayed, and no system of lighting is installed. The ambulance is a horse-drawn cab, in which only children can be placed in a recumbent position. The Leominster and Wigmore isolation hospital also has an ancient cab as ambulance, but there is neither horse nor harness. There is no indoor sanitation, no warming, and the lighting is by oil lamps. The report and recommendations have not yet been considered by the county council.

TREATMENT OF CANCER OF THE BREAST.

A CLINICAL REVIEW OF 150 CASES.*

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COMPARATIVELY few cases of mammary cancer are treated in this country even with prophylactic X ray therapy, or with radium for recurrences, and I therefore felt that a review of a series of 150 cases, in a very large percentage of which I have used post-operative radiotherapy, might be of value. I hope to prove that the results of surgical operation in this disease could be improved if all cases were treated with adequate and early post-operative radiotherapy.

The low operative mortality—about 1 per cent.—and the excellent immediate results—or very high three-year survival rate—probably account for the fact that treatment of cancer of the breast has remained so long exclusively surgical. The high operative mortality and poor end-results in cancer of the cervix uteri, on the other hand, have caused a growing interest in radiological methods. The operation for cancer of the breast has reached probably its final stage of development, while radiotherapy is in its infancy and is dependent on the research of the physicist and improvements in apparatus, necessitating a change of technique and plant every few years. Nevertheless, prophylactic post-operative X rays, and X rays or radium or both for recurrences and inoperable cases are now advocated by many authorities, notably Sampson Handley[1] in England; Warnekros, Seitz, Wintz,[2] Doederlein, Buchholz[3] and Holfelder[15] in Germany; Béclère and Regaud[4] in France; and in America Burton Lee[5] of the New York Memorial, Pfahler and Parry,[6] of Philadelphia, and Harrington[7] of the Mayo Clinic. I have myself visited clinics in Frankfurt, Erlangen, Freiburg, Berlin, Dresden, Munich, Paris, New York, Baltimore, Philadelphia, and Rochester—most of them more than once—in order to follow up the changes and modifications in technique.

Radical Surgical Treatment.

Since, according to most authorities, untreated cases survive for two and a half to three and a half years, the many hundreds of statistics given on a three-year survival basis must surely be unsatisfactory. Nevertheless, the consensus of opinion is at present in favour of a preliminary radical operation in all operable cases. Lane-Claypon's[8] figures show the superiority of a complete over an incomplete operation. Only 23 of her 2006 cases had had post-operative radiotherapy, but this superiority is more marked in the cases treated by surgery alone. Even more than on the nature of the operation, the results depend on the stage the disease has reached, and this probably accounts for the apparently excellent results sometimes obtained in early cases by incomplete operation. Curiously enough, as has been pointed out by Pfahler and others, the kind of operation and the stage of the disease are more important factors than the type of growth.

The stages of development of the modern operation are interesting and have an indirect influence on the technique of post-operative radiotherapy. Halsted,[9] of Baltimore, in 1894, first advocated the removal of the axillary glands and the pectoral muscles, and later also of the supraclavicular glands. He made a point of the necessity of removing these in one piece, making a very wide removal of skin and leaving the wound to heal by granulation. Stiles, of Edinburgh, pointed out that both Halsted and Gross removed an unnecessary amount of skin, but advocated a wider removal of the outlying breast lobules and circummammary fat, to ensure ablation of the cancerous lymphatics so frequently found throughout the organ. In this he won the support of Prof. Watson Cheyne, whose first paper on the subject was published in 1894. Rodman,[10] of Philadelphia, in 1908 introduced a further modification in technique, but to Sampson Handley[1] we owe perhaps our greatest debt for his operation founded upon epoch-making pathological researches.

Handley asserts that cancer spreads in the parietal tissues by permeating the lymphatic system like an invisible annular ringworm. The growing edge extends like a ripple in a wider and wider circle, within the circumference of which healing processes take place, so that the area of permeation at any one time is not a disc but a ring. The spread of cancer in the parietal tissues is, in fact, as truly a serpiginous process as the most typical tertiary syphilide. The ideal surgical operation, therefore, is one which, even in the early case, provides for the wide removal of the skin of the affected breast, the still wider removal of the deep fascia, the removal of the pectoral muscle or muscles, the axillary glands, and the fat en masse. Any exploratory or two-stage operation is to be avoided, for incision into the growth has been shown by Gye and others to be the surest means of disseminating carcinomatous cells. If an exploration has been made it should be followed immediately by the complete operation. Carter-Braine, and Massie report 722 cases of carcinoma with 80 per cent. three-year survival-rate without recurrence, provided that operation follows clinical or biopsy diagnosis immediately. If there is an interval between exploratory and radical operation the survival-rate is reduced by 13 per cent.

Another point of interest is that the lymph glands, though ultimately they may become infective foci, for a long time delay the progress of cancer cells. They act as mechanical filters, and there is evidence that, for a time at least, they exert a destructive action on the cancer cells which reach them, and only succumb to the invasion after a prolonged resistance. (Incidentally this is the chief reason why the supraclavicular glands are not irradiated unless they are already invaded by cancer, and why the practice of their routine removal has been abandoned.)

The peculiarities of metastatic distribution are in themselves sufficient to show that cancer cells which gain access to the blood are usually reduced to impotence. The opposite axillary glands, the opposite breast, or the inguinal glands are never found cancerous early in the case, as should occasionally happen if cancer cells can reach them embolically from other lymphatic areas. Some cases show invasion of the axillary glands on the side opposite the primary growth, probably indicating that permeation has extended well over the middle line and that cancer cells have thus penetrated to the trunk lymphatics which drain into the opposite axillary glands.

Case Records.

To obtain an accurate record of my cases I devised some years ago a special protocol which I have found useful, both for accurate note-taking and the necessary

* Based on a paper read before the London Association of the Medical Women's Federation.

regular follow-up. I find that my youngest patient was 26 and my oldest 81½ years—64 per cent. of all patients being between the ages of 40 and 60. The average duration of symptoms before the patients applied for any form of treatment was 11 months, which indicates the actual delay in seeking advice and gives some idea of the advanced stage of the disease. The symptoms and physical signs most often complained of were a lump in the breast (80 per cent.), much less often a feeling of discomfort, retraction, or discharge from the nipple, ulceration, or a stinging sensation. In only 3 per cent. was there a history of injury. This is apparently a low figure, as some observers record a history of injury in some 14 per cent.

I have treated 120 cases with post-operative X rays or radium or both, 21 cases with surgery only, and 9 cases with radiotherapy only. I have included all cases of breast cancer I have treated: 86 cases in which I performed radical operation myself, as well as 31 cases which have been operated upon by other surgeons and referred to me for radiotherapy, and 24 cases in which incomplete or palliative operation was performed. (Table I.)

TABLE I.—*150 Consecutive Cases of Cancer of the Breast.*

(*a*) *Grouped according to the treatment each patient received.*

Surgery.

Radical amputation	19
Simple amputation (palliative)	2
	21

Surgery and Radiotherapy.

Radical amputation and intensive X ray therapy	83
Radical amputation and radium	3
Radical amputation and intensive X ray therapy and radium	12
Simple amputation and intensive X ray therapy	16
Simple amputation and radium	3
Simple amputation and intensive X ray therapy and radium	3
	120

Radiotherapy.

Intensive X rays only	5
Radium only	2
Intensive X ray therapy and radium	2
	9

(*b*) *Grouped according to the various procedures in treatment.*

Radical amputation of breast	117
Incomplete operation (including palliative operation)	24
Pre- and post-operative intensive X ray therapy	120
Post-operative intensive X ray therapy in late recurrent cases	52
Intensive X ray therapy only	5
Radium only	2
Intensive X ray therapy and radium	2

SURGICAL TREATMENT.

In my own series of cases I have adhered to a modification of Halsted's technique. I make an elliptical incision, including the nipple and a wide margin of skin outside the area of the growth itself; I remove the sternal portion of the pectoralis major, cutting through the humeral end of the muscle as close to the bone as possible. In some cases I remove the pectoralis minor as well and in every case a very wide area of fascia, well over the mid-sternal line, to the clavicle above to the latissimus dorsi behind, and to the rectal sheath below. I then call for a high stool and sit comfortably down, and dissect out the axillary glands and fat, leaving as clean an axillary vein, artery, and nerves as possible.

I use several pints of warm 1–4000 corrosive sublimate to wash over the raw area, having kept the flaps the whole time as clean and protected as I could with thick warm wet mattress swabs. I put in a biggish drainage-tube through the outer flap up into the axilla, and unite the flaps with 8 or 10 through-and-through silkworm gut sutures, protected by thin rubber tubing, with Michel's clips between. For the first week I encourage the patient to keep her arm out at right angles on a pillow, using the hand as much as she comfortably can. On the tenth or twelfth day I let her sit up if she is inclined, but I do not hurry her out of the nursing home or hospital; she remains until the nineteenth or twentieth day.

The results of surgical operation are seen in Table II. They are quite excellent as regards primary operative mortality and three-year cures—but if one is brave enough to follow up the cases for 10 to 15 or more years they are found to leave much to be desired. Sampson Handley says that during the last 14 or more years every case of breast cancer upon which he has operated has received a prophylactic dose of X rays, and that in his series of cases recurrence in the skin has been almost absent, three of the five cases in which it took place occurring among the small percentage of cases which had escaped the usual prophylactic course of X rays; this has also been my own experience.

SURGERY AND DEEP X RAY THERAPY.

In my own series of treated cases of cancer of the breast I find that I have used pre- or post-operative radiotherapy in some 120 out of 150 cases. It is difficult to arrive at a correct assessment of its value, because it is only in a comparatively small number of cases that I have been able to give what can be called really adequate X ray treatment—namely, at least one pre-operative treatment 14 days before, and post-operative prophylactic treatment starting two to four weeks after operation. In Table II. I have compared my results with those of surgery only, as well as with untreated cases and normal survival in healthy subjects, and in Table III. I have shown other people's results.

Pfahler and Parry,[6] in a recent statistical study of radiation therapy in 939 cases of cancer of the breast, point out that the average time intervening between operation and X ray treatment in 646 cases was unfortunately as long as 15 months. My own average interval was also unfortunately 11 months. They believe with Soiland[11] that patients should be given pre-operative as well as post-operative treatment, and that the latter should be started as soon as two or three weeks after operation. Pre-operative radiation is based on the theory that such treatment devitalises the cancer cells, and therefore makes them less liable to grow if re-implantation or transference occurs during the operation. This devitalisation of cancer cells is a recognised effect of irradiation, both clinically and experimentally. Murphy, at the Rockefeller Institute, and others have published details of their research into this subject. Gye has shown that incision is one of the surest means of disseminating carcinomatous cells, and such a course of therapy, it is assumed, will reduce mitosis of such malignant cells sufficiently to render them innocuous. In my own series I was able to give adequate radiotherapy in 68 cases and inadequate in 52. I have had to include under "adequate radiotherapy" cases which have had their first X ray treatment as long as 6, 12, or more weeks after operation, and only three cases in which pre-operative treatment was given as well. Even with this interval the results are good, and more than justify post-operative prophylactic therapy, although I have little doubt that earlier irradiation would show still better results. Unfortunately, at the present time

cases are apt to be referred to the radiologist only when an inadequate operation has been performed.

In 40 only of these cases have I been able to give adequate X ray therapy after radical amputation, and these I have shown in Table IV. In working out the end-results, which are seen in Table III., it will be noted that adequate X ray therapy has improved the three-year end-results by 23 per cent. in I.P. and I.C. cases and 44 per cent. in II.P. and II.C. cases; the five-year end-results by 23 per cent. in I.P. and I.C. cases, and 40 per cent. in II.P. and II.C. cases; and the 10-year end-results by 4 per cent. in I.P. and I.C. cases and 69 per cent. in II.P. and II.C. cases. The 4 per cent. is not a correct figure, as two deaths out of three were not due to cancer. This is surely unquestionable evidence of the efficacy of such treatment.

TABLE II.—SHOWING PERCENTAGE OF SURVIVORS AFTER OPERATION, ACCORDING TO STAGE OF DISEASE, AS COMPARED WITH UNTREATED CASES, LIFE TABLE, AND MY OWN CASES TREATED WITH RADICAL AMPUTATION FOLLOWED BY ADEQUATE X RAY THERAPY.

Period of survival.	Life table (age 50).	Untreated cases (Green wood's 1651).	Cases of radical surgical operation.			The author's own cases.			
						Radical surgical operation followed by adequate X rays.			
			I.P. only. (149).	I.P. and I.C. (431).	II.P. and II.C. (1269).	Cases.	Analysis according to type of case.	I.P. and I.C.	II.P. and II.C.
3 years.	96·4	28·6	80·8	77·6	38·2	40 (1914–1927)	I.P. and C. = 11 II.P. and C. = 29	100	82·7
5 „	93·6	14·4	73·0	67·1	26·6	28 (1914–1925)	I.P. and C. = 10 II.P. and C. = 18	90	66·6
10 „	85·2	0	60·3	53·8	14·2	13 (1914–1920)	I.P. and C. = 7 II.P. and C. = 6	57·1*	83·3

The first six columns are taken from the Report on the Late Results of Operation for Cancer of the Breast in 2006 cases, by Lane-Claypon, issued by the Ministry of Health, 1928. The last four columns are taken from my own series of 150 cases of cancer of the breast, showing how th surgical end-results are improved by adequate post-operative intensive X ray therapy.

Class I.P. = Axillary glands not involved, as reported by the pathologist.
„ I.C. = „ „ „ „ clinical evidence only.
„ II.P. = „ „ involved, as reported by pathologist.
„ II.C. = „ „ „ „ clinician only.

* This percentage should be higher as two deaths not due to cancer.

TABLE III.—EXAMPLES TAKEN FROM AMERICAN AND CONTINENTAL STATISTICS.

End-results in Cases of Radical Amputation Only.					*End-results in Cases of Radical Amputation followed by Intensive X Ray Therapy.*			
Collected by—	Cases.	Survivals (*a*) without and (*b*) with glandular involvement at end of—			Surgeon and hospital.	Cases.	Survivals without and with glandular involvement at end of 5 years.	
		3 years.	5 years.	10 years.			Without.	With.
Mayo Clinic[19] (1) Stuart Harrington[7]	2083	(*a*) 79 % (*b*) 37 %	(*a*) 70 % (*b*) 22 %	(*a*) 55 % (*b*) 18 %	Pfahler and Parry[6] (Philadelphia)	242	89 %	47 %
(2) Judd (1902–1912)	609*	44·7 % (many with recur.).	—	43 % dead.	Schmitz[13] (Chicago)	107	69 %	51 %
Burton Lee[5] (New York)	—	—	(*b*) 15 %	—	Burton Lee[5]	355	—	35 %
Rodman[16] (Philadelphia)	50 (private cases).	72 %	48 %	14 % (26 % dead).	Doederlein (Munich)	—	80 %	36 %
Neander[17] (Stockholm, 1890–1912)	284 (81 not traced).	70 % with fatal recur.	12 %	—	Wintz[3] (Erlangen)	—	81 %	38–56 %
Buchholz[8] (Magdeburg)	121	24 % symp.-free.	22 %	11 %	Buchholz[8]	237	33 % symp.-free.	24 % symp.-free after 10 years.

* Results known in 514; 266 known to be deceased.

ADEQUATE RADIOTHERAPY IN CASES OF INCOMPLETE OPERATION.

Of these I have in my series 14 cases; 11 are alive and well, but 4 of these are too recent to be of value in any table of statistics. Ten cases were treated between 1914 and 1927. Of those alive and well No. 1 was treated 12 years ago and No. 49 7 years ago.

CASE 1.—The patient was a married woman aged 51, without children. She had noticed the lump a few weeks before coming to me in 1917. I performed a simple amputation, as the patient took the anæsthetic very badly. I began treating her with X rays three weeks later. Six months later the axillary glands on both sides became hard and large. With further X rays, which I continued for two years, these became normal, and the patient has had no further recurrence and is extremely well.

CASE 49 was also interesting; she came to me in 1923 at the age of 46. She was a widow with two children, and had noticed a lump for the last three years. Although she was, technically speaking, inoperable as the axillary glands on both sides were enlarged and hard, I advised and performed a palliative simple amputation, starting prophylactic X ray therapy three weeks after and continuing it at intervals for two years. The glands are now normal, and there has been no sign of recurrence (seven years after.)

INADEQUATE RADIOTHERAPY.

I have carried out inadequate radiotherapy in 43 other cases combined with radical operation, and in 9 cases combined with incomplete operation. In the

TABLE IV.—FORTY CASES OF THE AUTHOR'S OWN SERIES IN WHICH RADICAL OPERATION WAS FOLLOWED BY ADEQUATE X RAY THERAPY.

Case.	Year.	Age.	Pregnancies.	Operation.	Type of case.	Pathological report.*	Time between operation and radiotherapy.	Radiotherapy.	Time between operation and recurrence.	Recurrence.	Duration of life after operation.
4	1915	45 S	—	Radical.	A, C1.	Duct carcinoma.	— Pre- and post-.	23 over 3 yrs. A2, B, C1, and Ra Br needles.	11½ yrs.	Local sloughing—to bone.	15 yrs. (S.L.).
7	1917	37 S	—	,,	A, C1.	Alveolated masses of epithelial cells in a scanty fibrous stroma; undoubtedly malignant.	2 wks.	A2, C2, 70 over 4 yrs.	7 mths., 1 11/12 yrs.	Supraclavic.; local nodules.	4½ yrs. (died: T.B.).
8	1922	49 M	2	,,	A.	Advanced spheroidal-celled carcinoma; cancer cells actively growing and showing no signs of degeneration.	1 mth.	Three A2, two A1 over 8 mths. +A1 1930.	—	None.	8 yrs. (S.L.).
14	1921	43 M	1	Radical; palliative	B1, C1 and C2	(1) Definite chronic scirrhus; local malignancy relatively slight. (2) Advanced spheroidal-celled carcinoma penetrated widely into surrounding fat.	Pre- and post-.	A2—15 over 19 mths. +A1, B1 and C1.	3½ yrs.	Distant spine and phalanx; other breast.	4½ yrs.
16	1920	49 M	3	Radical.	B1.	Advanced carcinoma mainly scirrhus; cells show active proliferation; gland shows complete replacement by cancer growth.	Pre- and post-.	A2—23 over 7 mths., C1.	—	None.	10 yrs. (S.L.).
17	1922	28 M	0	Two-stage.	B1, C1 and C2	Sections show definite malignant condition.	24 days.	A2—11 over 10 mths., A1, B and C2.	8 mths.	Local; distant.	1 yr.
22	1917	46 S	0	Two-stage; simple.	B1, C2.	Gland tissue completely replaced by malignant carcinomatous growth.	3 mths.	A2—30 over 3 yrs., B and C2.	10 mths.	Other breast.	13 yrs. (S.L.).
28	1917	57 M	1	Breast and glands.	A.	Carcinoma, type not stated.	3 wks.	A2—30 over 3½ yrs., B and C2.	—	None.	5 yrs. (death not due to cancer).
33	1917	66 M	0	Radical.	A, C2.	Malignant growth with cystic degeneration.	3½ wks.	A2—13 over 1 7/12 yrs., B, C2.	6½ wks.	Supraclavic.	3 yrs. symptom free (N.T.).
34	1914	55 W	2	,,	A, C1.	Carcinoma, type not stated.	3½ yrs.	A2—8 over 8 mths., B, C2.	4 yrs.	Local nodule.	8 yrs. Alive and well (N.T.).
37	1921	47 M	2	Radical; recur. nodule removed.	B1, C1.	(1) Advanced and very malignant soft cancer; active proliferation. (2) Spheroidal-celled carcinoma, much fibrous stroma, malignancy relatively feeble.	2 mths.	A2—57 over 5 yrs., A1, B, C2.	18 mths.	In scar, mediastinum, and brain.	5 yrs.
39	1919	53 W	3	Radical.	A.	Carcinoma, type not stated.	3 wks.	A2—36 over 3 yrs., B, C2.	—	None.	11 yrs. (S.L.).
41	1918	35 M	0	Two-stage.	B1.	A very malignant growth in the form of an alveolar carcinoma. No gland tissue present, only carcinoma.	6 wks.	A2—36 over 3 3/12 yrs., B, C2.	—	,,	12 yrs. (S.L.).
52	1922	55 W	3	,,	B1.	Carcinoma; lobulated and cystic variety. Proliferation in the cysts and in the loculi, malignancy.	4 mths.	A1—4 over 2 3/12 yrs., B, C2.	—	,,	8 yrs. (S.L.).
56	1926	40 W	2	Radical.	B1.	Very chronic scirrhus almost entirely converted into dense fibrous tissue. Gland shows considerable diffuse infiltration.	6 wks.	A2—6 over 4½ mths., C2.	—	,,	4 yrs. (S.L.).
65	1925	61 M	3	,,	B1, C1.	Definite malignant growth of rather unusual type.	6 wks.	A1—2 over 2 yrs., C2 +Ra Br needles 4 times.	1 9/12 yrs.	Local.	5 yrs. (S.L.).
66	1921	40 M	1	,,	B1, C2.	Soft-celled carcinoma of high malignancy; encephaloid type.	15 days.	A2—17 over 1 9/12 yrs., A1—2 over 4 mths., B, C2.	6 yrs.	Mediastinum.	6 yrs.
68	1922	49 S	0	,,	B1, C2.	Very malignant scirrhus in some parts cancer cells are in actively proliferating masses. Glands replaced by similar malignant growth.	11 wks.	A2—8 over 6 mths. A1—8 over 3½ yrs., B, C2.	8 mths.	Other breast.	4 yrs.
69	1914	47 S	0	Radical amp.; removal of supraclav. recur.	B1, C2†.	Carcinoma; type not stated.	10 mths.	A2—39 over 3 9/12 yrs. +6 over 3 wks., B, C2.	8 mths.	Gland above rt. clavicle.	16 yrs. (S.L.).
70	1926	46 M	3	Two-stage.	A.	Spheroidal-celled carcinoma, unusual type of growth, very malignant.	11½ mths.	A2—3 over 3 mths., C2.	—	None.	4 yrs. (S.L.).
72	1926	37 W	0	Radical.	B1.	Carcinoma; type not stated.	2 mths.	A1, B, C2.	—	,,	4 yrs. (S.L.).
73	1925	26 S	—	,,	A.	Ducts much distended and filled with actively proliferating epithelium. No actual malignancy present, but appearances indicate first stage.	3 mths.	A1—2 over 7 wks., B, C2.	—	,,	6 yrs. (S.L.).
75	1925	35 M	2	,,	B1, C1.	Carcinoma; type not stated.	6 wks.	9 treatments and radium, C2.	5 wks.	Local.	2 yrs.
79	1925	58 M	0	,,	B1, C2.	Typical chronic scirrhus. Much fibrous tissue and general inflammatory reaction. Glands invaded by malignant growth.	2 mths.	A1—4 over 5 mths., B, C2.	14 wks.	Supraclavic. and mediastinal.	1 5/12 yrs.
80	1923	40 M	1	,,	B1, C2.	Breast scirrhus carcinoma. Lymph glands; extensive secondary infiltration with carcinoma growing rapidly.	5 wks.	A1—2 over 1 yr. B, C2.	4 yrs.	Other breast.	4 3/12 yrs.
82	1923	47 W	0	Two-stage.	A.	Scirrhus carcinoma. Axillary glands show extensive deposits.	6 wks.	A1—2 over 5 mths., C2.	—	None.	6½ yrs. (S.L.).

greater proportion of cases it was performed for recurrences in patients who had not been treated with prophylactic radiotherapy, and in other cases it was given for the relief of pain.

DEEP X RAY THERAPY ONLY.

I have used this only in five cases, when operation was contra-indicated by the condition of the patient. One of these I lost sight of after two X ray treatments. Of the other four, two lived three years, one four, and one five years after the beginning of treatment.

In my cases I have included all five types—namely:

(*a*) early without apparent secondaries;
(*b*) advanced with secondaries (i) axillary; (ii) supraclavicular;
(*c*) recurrence after operation (i) local; (ii) distant.
(*d*) primary inoperable.
(*e*) primary operable, but operation refused or contra-indicated.

PATHOLOGICAL REPORTS AND RADIOLOGICAL TECHNIQUE.

The pathological reports, of which I have records in all but a small percentage of cases, are classified under the following headings:—

(*a*) Spheroidal-celled (mainly fibrous); (*b*) spheroidal-celled (mainly cellular); (*c*) "carcinoma," type not stated; (*d*) Adenocarcinoma; (*e*) columnar-celled; (*f*) colloid cancer; (*g*) Paget's disease; (*h*) mixed carcinoma; (*i*) sarcoma; (*j*) no pathological report obtainable.

I have, of course, exact notes of the technique used in each case, but my experience has been that of others—namely, that the success of treatment depends more on the type of case when first treated and the shortness of time between the operation and radiotherapy than on the type of growth, marked radiosensitivity being no criterion of the ultimate ease of cure.

The actual technique has been changed with the change of type of the X ray installations used. I have tried to keep up with the modern development in apparatus.[18] In 1922 I adopted a modification of the Erlangen technique, as worked out by Seitz and Wintz,[2] using a voltage of 136,000 and giving only one or two massive treatments. In 1929 I further modified my technique by using the Stabilivolt. Briefly, my present technique is this:

The patient is prepared as for a minor operation; an aperient is given the day before if necessary, and she takes only a light breakfast. The part to be irradiated is mapped out with a skin pencil. If the supraclavicular glands are found not to be affected they are carefully avoided. If the axillary glands which have been removed are found to be carcinomatous the axilla is included.

In my early cases I rayed the patient with her arm held at right angles to her body; in my later cases with the arm comfortably to the side. My present technique for prophylactic irradiation is one big field anteriorly, the focal distance being 40–50 cm. I use either 0·5 Cu. +2 al. or 1 Cu. +2 al. filter, a voltage of 156–180,000, 3 ma. in the secondary current, a Coolidge or A.E.G. tube of a unit skin dose of approximately 12·15 min., and a depth dose of 18·6 per cent. In every case I warn the patient to be careful not to apply

TABLE IV.—FORTY CASES OF THE AUTHOR'S OWN SERIES IN WHICH RADICAL OPERATION WAS FOLLOWED BY ADEQUATE X RAY THERAPY—(*continued*).

Case.	Year.	Age.	Pregnancies.	Operation.	Type of case.	Pathological report.*	Time between operation and radiotherapy.	Radiotherapy.	Time between operation and recurrence.	Recurrence.	Duration of life after operation.
83	1918	63 M	2	Simple amp., rt., 1918; radical, lt., 1926.	A.	1918: Chronic mastitis only. 1926: Dense fibrous tissue with areas of acute inflammatory reaction, but no malignancy. Glands almost completely replaced by spheroidal-celled carcinoma.	6 wks.	A1—1, B, C2.	—	None.	12 yrs. (1st op.) 4 yrs. (2nd op.) (S.L.).
84	1916	65 W	1	Radical.	B1.	Carcinoma; type not stated.	2 yrs.	A2—53 over 7½ yrs., A1—5 over 2½ yrs., B, C2.	—	,,	20 yrs. (died: heart trouble).
87	1927	54 S	—	,,	B1, C1.	,, ,, ,,	17 days.	A1—13 over 2½ yrs., B, C2.	1 yr.	Subcut. nodules, chest wall.	3 yrs. (S.L.).
97	1927	49 M	0	,,	B1, C2.	Duct carcinoma. Gland shows considerable involvement; cancer cells here are spheroidal and show active growth.	1 mth.	A1—2 over $1^{9}/_{12}$ yrs., B, C2.	14 mths.	Costo-sternal junction.	3 yrs.
98	1927	47 S	—	,,	B1, C1.	Advanced spheroidal-celled carcinoma invading the surrounding tissues. Gland replaced by masses of carcinoma.	2 mths.	A1—2 over 7 mths., B, C2.	6 mths.	Centre of scar.	3 yrs.
99	1927	58 S	—	,,	B1, C2.	Carcinoma; type not stated.	2 wks.	A1—1, B, C2.	6 mths.	Liver.	7 mths.
00	1927	47 S	—	Two-stage.	B1.	Simple cystic mastitis; at another part a definite carcinoma (cellular scirrhus). Inflammatory evidence absent.	3 mths.	A1—1, B, C2.	—	None.	3 yrs. (S.L.).
01	1925	63 S	—	Radical.	B1, C1, and C2.	Carcinoma; type not stated.	2 wks.	A1—7 over 3 yrs., B, C2.	2 yrs.	Upper scar and supraclavic.	5 yrs. (S.L.).
102	1927	63 M	0	,,	B1.	,, ,, ,,	2 mths.	A1—1, B, C2.	—	None.	3 yrs. (S.L.).
103	1927	60 M	2	,,	B1.	Very advanced malignant growth (spheroidal-celled carcinoma) invading surrounding adipose tissue.	2 mths.	A1—1, B1, C2.	—	,,	3 yrs. (S.L.).
106	1927	66 M	3	Two-stage.	B1.	Carcinoma; type not stated.	5 wks.	A1—3 over 4 mths., B1, C2.	—	,,	3 yrs. (S.L.).
124	1924	59 M	0	Radical.	B1, C2.	,, ,, ,,	3 mths.	A1—2 over 6 mths., B1, C2.	5 yrs.	Post-cervical region.	6 yrs. (S.L.).
131	1927	56 M	0	,,	B1, C1.	,, ,, ,,	3 wks.	A1—4 over 1 yr., B, C2.	18 mths.	Spots over scar.	3 yrs. (S.L.).
139	1914	52 M	1	,,	B2, C2.	Scirrhus.	5 mths.	A2—3 over 3 mths., B, C2.	9 mths.	Liver, brain, œdema of arm.	14 mths.

Type of Case (at time of operation): A, Early and without apparent secondaries; B, advanced with secondaries; B1, axillary; B2, supraclavicular; C, recurrence after operation; C1, local; C2 distant.

Radiotherapy: A1, New technique; A2, old technique; B, axilla; and B1, supraclavicular areas exposed; C1, pre- and post-operative; C2, post-operative only.

* The pathological reports have been greatly abbreviated for inclusion in this table.

† (viz., supraclavicular).

M. = Married. S. = Single. W. = Widow.

S.L. = Still living. N.T. = Not traced after.

soap or any irritant or great heat to the skin for some weeks, and to use an emollient cream (such as cera. alb. ʒiss., cetaceum ʒiss., Ol. Olivæ ʒix., and aq. destil. ʒiiiss.) for at least a week.

This treatment I like to repeat in six weeks.

CASTRATION.

Hans Meyer, Polano, Rosenberg, and Wintz and his disciples advocate, in addition to X ray treatment of the breast, the induction of an artificial menopause by means of deep X ray therapy. They maintain that every menstruation as well as pregnancy is accompanied by changes in the activity of the mammary gland. In some 38 per cent. there is increase in the size of the gland just before the period; there is actual secretion in 6 per cent. of parous women and in 1·5 per cent. of nulliparous women—due probably to the action of an ovarian hormone. They assert that activity of the mammary gland is to be avoided in every carcinoma of the breast. Wintz reports several cases in which, for instance, a pregnancy has been accompanied by recrudescence of malignant growth in an apparently quiescent radiated breast. Some years ago Stanley Boyd published a series of cases in which he had performed double oöphorectomy in cases of breast cancer. Sir Holburt Waring[17] also performs this operation in inoperable cases, and has observed reduction in the size of the tumour in 20–30 per cent., only to be followed by recrudescence three years later.

The technique is simple, and with my own apparatus I can now ensure a menopause in one, or at the most, two treatments of one and a half hours each.[18] I have, however, never been able to persuade myself that there is sufficient evidence of its value in cases of breast cancer to justify the extra irradiation involved, and I have therefore never carried it out for the treatment of this disease.

RADIUM TREATMENT.

In recurrent nodules occurring over sternocostal articulations, or over or near the scar, in some primary cases, and for supraclavicular glands, there is perhaps no better treatment than radium. There are three methods of applying radium in cancer of the breast:—

1. Superficially, by means of batteries of needles enclosed in applicators of platinum or silver and further screened by sheet rubber 1 mm. thick; or by fixing the needles on to a mould of Columbia paste (a mixture of wax and sawdust). It is important to calculate the dose of radium very exactly to ensure a homogeneous radiation.
2. By needles containing radium distributed evenly in such a way that 1 mg. radium element is contained in each cm. of length and suitably screened, buried into the tissues at even distances, and left in situ a certain number of hours.
3. At a distance, using the beam of rays from a mass of radium contained in the so-called "bomb." In this case by means of cross-fire—viz., introducing the rays through different areas of skin, a larger dose can be applied to the depth of the tissues without fear of too much skin reaction.

Geoffrey Keynes (St. Bartholomew's Hospital)[16] has recently published, in his Hunterian lecture, a series of 109 cases in which he has used radium only for carcinoma of the breast, and claims that even for early cases radium is the method of choice. Failures are probably due to an insufficiently long exposure or to treatment of an insufficient area. Sir Lenthal Cheatle insists on the widespread occurrence of microscopic changes in the mammary gland which contains a carcinoma, apart from the lymphatic infiltration. Keynes therefore advocates the wide application of radium—namely, beneath the breast, beneath the pectoral muscles, in the axilla, and under the costocoracoid membrane above the clavicle, and in the upper three or four intercostal spaces—for a period of 168 hours (7 days). The main principle is prolonged exposure to a relatively small dose of radium and the application of the needles in such a way as to avoid puncturing the actual growth itself.

The results are, briefly, a change in the size of the tumour within two or three weeks. By the end of two months the tumour may, in favourable cases, shrink to half its original size, and disappear in three to six months. If, by the end of six months, the growth is stationary, a second application of radium may be given or the residual tumour may be excised. For recurrences—especially those which are so common over the costosternal region—radium in adequate doses seems to be infallible. In my own short series of radium cases they have all completely disappeared, and so far there has been no recurrence.

SURGERY, USING THE DIATHERMY OR ENDOTHERMIC KNIFE.

To prevent the actual dissemination of carcinoma by operation—a condition occasionally seen, the secondary growth appearing in the skin and at a distance apparently even more quickly than if no surgical treatment at all had been undertaken—several surgeons of late have used the diathermy knife instead of the ordinary scalpel. I have not myself used this method in a radical amputation of the breast, although I have done so for recurrent nodules in several cases and for seven cases of primary carcinoma of the vulva. Indeed, there is much to recommend it, and the newest type of diathermy apparatus is so devised that the actual cut is cleaner and causes less coagulation and charring of the tissues; the wound therefore heals by first intention.

Conclusions.

(*a*) For successful treatment in operable cases we have to ensure early treatment, when the disease is still localised to the breast, by

(1) *radical operation* removing in one piece the breast, fascia, pectoral muscle or muscles, fat and glands; and, in addition, most important of all,

(2) *adequate X ray therapy* beginning not more than three to seven weeks after operation, and lastly,

(3) in all advanced cases three or four needles of *radium* placed along the third, fourth, fifth, and sixth intercostal spaces in the hope of destroying cancer cells in the internal mammary group of lymph glands, and two or three needles in the infraclavicular region and axillary region.

(*b*) *For inoperable cases* radium and X ray treatment, according to the kind of recurrence. In those cases in which reduction in the size of a recurrent nodule takes place and it becomes freely movable, surgical eradication, preferably by the endothermic knife, may be carried out within 8–10 weeks. In those cases in which recurrence and metastases produce pain and discomfort, radiation, according to Bloodgood, is the only method that offers any relief at all.

The most important factor of all in ultimate success is the early treatment of the disease. As symptoms are unfortunately often absent until the tumour is well developed, probably the only way to ensure early treatment would be to establish cancer clinics all over the country, and circularise the fact amongst women of all classes who have passed the age of 35, urging them to be regularly overhauled every six months by a competent specialist. Only in some such way as this are we likely to reduce the cancer incidence.

(*Bibliography at foot of next page.*)

ANTHRACOSIS, SILICOSIS, AND TUBERCULOSIS IN COAL-MINERS.

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The name "anthracosis" has been loosely applied to describe the black pigmentation so often found in the lungs of city dwellers and of persons exposed, either in town or country, to the smoke of coal fires. It was first used, however, in a more restricted sense by its originator, Dr. T. M. L. Stratton (1838), who coined the word to describe the "black lung" of coal-miners, and it seems desirable to retain the word for this condition only.

As long ago as 1813, George Pearson had demonstrated clearly that the black pigment accumulated in the lungs of city dwellers was carbon. The fact that the anthracosis of coal-miners may present a marked accumulation of silica as well as of carbon in the lung tissue was first proved by E. H. Greenhow in 1869, this observer publishing his chemical analysis of a coal-miner's lung in that year and demonstrating the existence of 30 per cent. of silica in the lung ash after incineration. Tattersall in 1926 called attention to the occurrence of silicosis, as proved by radiological and clinical findings, in a series of South Wales coal-miners who had been exposed to silica dust while working with drills in "hard headings."

That radiological evidence of a lung fibrosis indistinguishable from that of silicosis is to be found, not merely in those coal-miners employed in "hard headings" but in a large proportion of middle-aged coal-miners working at the "coal face" only, has been demonstrated in the course of a recent "radiological study of certain groups of 'industrially healthy' South Wales coal-miners," carried out by members of the medical staff of the Welsh National Memorial Association, and published in the Association's eighteenth annual report, 1930; while the findings of Collis and Gilchrist (1928) in coal-trimmers suggest that somewhat similar appearances may be found in X ray films of the lungs of persons other than coal-miners exposed to high concentrations of coal dust.

The writer has been engaged for some years in an examination of the pathological and histological characters of the lungs of coal-miners. In 1927 he published a brief description of his findings in one of the "hard heading" workers of Tattersall's series, together with a chemical analysis of the lung ash carried out by Dr. J. Pryde, of the Physiology Department, Cardiff, showing that a marked increase in perivascular and peribronchial lung fibrosis and blockage of lymph channels was associated in this case with a percentage of silica much in excess of that found in the lungs of a non-anthracotic male adult, dying of pulmonary tuberculosis, examined as a control.

Since that date, the writer and Dr. A. F. Sladden, of the Beck Laboratories, Swansea, working on a series of lungs from South Wales coal-miners, have been able to carry their observations further and to link up their pathological and histological findings with chemical analyses carried out, at first, by Dr. Pryde, and Mr. C. A. Seyler, of Swansea, and later, through the good offices of the Mines' Department, by Prof. R. V. Wheeler and Dr. F. V. Tideswell, in the laboratory of the Safety in Mines Research Board at Sheffield. The results of this investigation have recently been published (1930), and need not here be referred to in detail.

Anthracosis a Dual Condition.

The only point to which it is desired to direct attention is the fact, which comes out clearly from our investigations, that the anthracosis of coal-miners is a dual condition in which the retention of coal dust in the lungs is associated with and, in all probability, due to, a state of diffuse or nodular lung fibrosis and lymph blockage indistinguishable from that found in the silicosis of gold-miners on the Rand and of those engaged in the "refractories" industries in this and other countries.

Not only are the pathological and histological appearances similar but the chemical analyses reveal, in the lung ash, percentages of silica of the same order as those found by J. McCrae (1913) in the lungs of Rand gold-miners; while the examination of lung sections with "crossed Nichols" shows the same accumulation of doubly refractile particles described by Watkins-Pitchford and James Moir (1916) in silicotic lungs at Johannesburg.

Moreover, in our coal-miners' lungs, the extent of the fibrosis and lymph blockage, the percentage of silica in the lung ash, the number of doubly refractile particles visible in the sections, and the degree of clinical pulmonary disease recorded prior to death are all found to vary directly with the amount of exposure of the individual to silica-containing dust, being greatest in those with an industrial history of work in "hard headings" or as "repairers," although often quite marked in coal-miners with no history of work other than at the coal face.

In the case of the "hard heading" workers and "repairers," the source of the silica dust leading to this silicotic fibrosis is obvious. In the case of other types of coal-miners, it is less clear, and to the elucidation of this problem of the source of the silica risk in coal-mining, further research is urgently necessary. But, for the moment, it suffices to say that, in the coal-mining industry, a risk of silicosis exists, that is as great, in the case of certain categories of coal-miners, as the risk of silicosis in gold-mining, tin-mining, and the "refractories industries," and that, in a large proportion of old coal-miners of other categories less intimately in contact with stone dust, there is radiological, pathological, and chemical evidence of a condition indistinguishable from pulmonary silicosis.

(*Continued from previous page.*)

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Resistance to Tuberculosis.

One characteristic feature of silicosis, however, is absent in the case of coal-miners—the increased liability to tuberculosis. In fact, there is much reason to think that coal-miners, far from being specially liable are, on the contrary, exceptionally resistant to pulmonary phthisis. Haldane (1923), dealing with this subject, speaks as follows: "The diminished relative liability to phthisis among coal-miners has existed for generations. In the available statistics for 1849–53 it is no less marked than now." Collis (1922) expresses the same view. "The incidence of phthisis among coal-miners, not only in Great Britain but in other countries, is lower than that found in other occupations with the exception of agriculture." Sir Thomas Oliver (1916) writes as follows: "The comparative freedom of the coal-miner from tuberculous phthisis is not confined to this country alone. According to a census of the United States, pulmonary consumption caused 10·6 per cent. of all deaths among miners and quarrymen as against 16·2 per cent. for all occupied males."

That the contrast between coal-miners and other workers in silica dust is a striking one will be appreciated from the following figures extracted from the Registrar-General's Decennial Supplement, 1921.

Mean Annual Respiratory Tuberculosis Mortality by Age-Groups per 100,000.

Age	16–	20–	25–	35–	45–	55–	65–	70–
All occupied and retired civilian males	69	136	133	160	166	150	114	64
Coal-hewers and getters ..	40	78	80	110	114	139	147	47
Metal grinders	61	136	237	551	1149	1246	761	383
Tin and copper miners ..	—	91	746	1520	1744	2632	517	680

There can be no doubt whatever that silicosis, when due to exposure to silica dust without coincident exposure to coal dust, is accompanied by a terrible liability to tuberculosis in late middle age. There is no need to labour this point, which is known to all who have studied the subject.

With regard to coal-miners and their fortunate exemption from this risk, we are driven to the alternative of believing either that the lung fibrosis from which they suffer is not due to silica dust or else that there is, in the industry, some factor peculiar to coal-mining and capable of neutralising the risk of tuberculosis to which silicotic coal-miners would otherwise be exposed.

As already indicated, there is no appreciable difference between the pathological, chemical, and radiological findings in anthracosis in South Wales and silicosis on the Rand except the added accumulation of coal dust in the former; and it would, therefore, appear unreasonable to suppose that the lung fibrosis of coal-miners is essentially different from that called silicosis in gold-miners. If this much be conceded, we are forced to the conclusion that there is some factor peculiar to coal-mining which is inimical to the development and spread of tuberculosis in the lungs. Oliver believes this factor to be "the better ventilation of the coal-mines, the air of which, as it passes onwards through the mine, becomes rid of bacteria and reaches the miner at his work in a purer state than the air we breathe in the streets of a large town."

This theory appears hardly tenable when it is recalled that the ventilation of the Rand gold-mines is at least as good as that of the coal-mines of South Wales; nor is it consistent with the fact that the coal-miner, who, after all, lives the greater part of his life above ground and is equally exposed with the rest of the population to home contact with infection, suffers less from tuberculosis, in every age-group except one, than "all occupied and retired civilian males."

Haldane, in the paper already quoted, says: "It is difficult to resist the conclusion that in some way the inhalation of dust in coal-mines tends to prevent phthisis," and he appears to think that the beneficent action of coal dust is due, in part at least, to a power of stimulating "the physiological process of dust excretion" or, in other words, of helping on the process of carrying the injurious silica dust out of the lungs in the interior of phagocytic cells. This idea was thought to gain support from the experiments of Mavrogordato (1918) on the dusting of animals with silica dust and coal dust in varying combinations. It does not, however, explain the mechanism by which silica dust, when inhaled alone, gains access to the lung tissues. In the writer's opinion, it is only by transport in the interior of phagocytes that it can pass from the alveoli into the interstices of the pulmonary tissue, a consideration which implies active phagocytosis of silica particles. Incidentally, these particles can be located inside phagocytes by the examination of stained sections alternately by direct and by polarised light. Kettle (1930), in a recent paper, opposes this theory of the stimulation of the phagocytosis of silica particles by coal dust, and quotes Gardner to the effect that "quartz produces the greatest degree of phagocytic activity of any dust he has investigated."

To the writer, his own observations into the anthracosis of coal-miners suffice to convince him that the simultaneous inhalation of silica dust and coal dust over long periods leads to a blocking up of lymph drainage by silicosis, and a resulting retention of the coal dust in the lungs rather than to any increased elimination of the one dust with or through the other, a belief which is supported by the experiments of Mavrogordato (1922) in the exposure of guinea-pigs first to silica dust and then to coal dust. It is clear, in any case, that the theory of stimulation of the "physiological process of dust excretion" does not suffice to explain the relative freedom of coal-miners from tuberculosis, since they are by no means free from silicosis.

It comes to this: that the only outstanding histological and chemical difference between the silicotic and the anthracotic lung is the retention of excessive coal dust in the latter; and that the only outstanding epidemiological difference between pulmonary silicosis and anthracosis is the absence of tuberculosis liability in the latter.

This being so, it is natural to associate the presence of accumulated coal dust in the lung with the relative exemption of coal-miners from a high tuberculosis mortality and to seek in the one phenomenon an explanation of the other.

The "Protective Influence" of Coal Dust.

The theory that coal dust affords some degree of protection against pulmonary tuberculosis has been put forward by numerous investigators. Wainwright and Nichols (1905) give interesting statistics in support of this contention from Scranton in the United States, and add a valuable summary of the views of German workers on the subject. They quote Goldman (1905), who holds that coal dust has an

antiseptic action, and Arnold (1885), who thinks that "if there is any action, it is due to the fact that the deposits of dust prevent the spread of the poison," and does not believe in a direct bactericidal effect of carbon on the tubercle bacillus. Their own experiments in vitro failed to show any antiseptic action by carbon but, in a limited number of in vivo experiments in the induction of experimental tuberculosis in guinea-pigs previously rendered anthracotic by repeated exposures to coal dust, they found that there was, in the dusted animals, an absence or limitation of the tuberculisation of the lungs as compared with the non-dusted "controls," a finding which was, however, less definite in a subsequent series of experiments, and which Mavrogordato (1922) has failed to confirm. "Our opinion," they conclude, "is that the coal dust in the lungs does exert a protective influence against the tubercle bacilli, and that it is due to the stimulating effect of coal dust on connective tissue growth." Their conclusion in favour of a "protective influence" is probably right but, in view of the much greater power of silica dust than coal dust to stimulate the formation of connective tissue and its known association with an increased tuberculosis liability, their theory to account for this protective influence is almost certainly wrong.

There appear to be valid arguments against the three main theories so far suggested to explain the alleged protective influence of coal dust against tuberculosis. Neither the physiological concept of an adjuvant action to the phagocytosis of silica particles, nor the theory of an antiseptic action, nor that of a stimulation of connective tissue by the carbon particles will bear close investigation. There remains the possibility that carbon may owe its "protective influence" to its power of adsorbing toxic substances. The adsorptive power of finely divided carbon for colloidal substances such as dyes is well known, and those familiar with the defensive side of gas warfare will recollect the astonishing efficiency of the carbon layer of the "box respirator" in adsorbing poisonous gases.

As to the adsorption of the active principle of tuberculin by carbon, conflicting opinions have been expressed by different observers. Long and Seibert (1925) failed to demonstrate any adsorption of the active principle of tuberculin by animal charcoal, and Jousset (1915) is quoted by Boquet as having failed to obtain any adsorption of tuberculin with "le noir Girard," the type of carbon used by him in his experiments. Boquet, Nègre, and Valtis (1928), on the other hand, were able to show clearly that a very finely divided charcoal, "norit supra," is highly potent in adsorbing from tuberculin the constituent on which its activity depends. Dorset, Henley, and Moskey are quoted by Tytler (1930) as finding that adsorbents carrying a negative charge, including charcoal, largely or completely abolish the activity of tuberculin.

The writer has put this question to the test, and has been able to prove beyond any question that the finely powdered dust of anthracite coal is capable of adsorbing a large proportion of the active principle from old tuberculin diluted with normal saline solution. The active principle of tuberculin, as also of tubercle bacilli, that is to say, the part which evokes allergic reactions in hypersensitive tissues, has been shown by Long and Seibert in America and by Tytler (1930) in this country to be a protein. It is probably this same active principle which leads to the allergic reactions around tuberculous foci, reactions which, when excessive, lead on through inflammatory hyperæmia to necrosis and death of tissue. It is not unreasonable, therefore, to assume that the presence of large quantities of carbon particles in the immediate vicinity of tuberculous foci might, by adsorbing the products of the growth and destruction of tubercle bacilli, go far to prevent or diminish the inflammatory phenomena which constitute tuberculous disease.

It is worth noting that carbon particles and tubercle bacilli inhaled into the lungs are dealt with by the same type of phagocytic cell, the monocyte, and carried through the same channels along the lung lymphatics, to the lymph nodes at the hilus; or, if their progress is arrested by the blockage of lymphatics through silicosis or any other cause, they must necessarily take the same collateral channels towards the pleura and the pleural lymphatics or accumulate in the same situations as coal dust in the lung tissue. In the case of the coal-miner, who, like other people, must often inhale tubercle bacilli, there is always certain to be a considerable amount of carbon in the immediate vicinity of such of the bacilli as may reach the lung tissues.

The power of finely divided coal dust to adsorb and inactivate a proportion at least of the active principle on which the clinical effects of tubercle bacilli depend has been established. Whether the collection of carbon particles which have accumulated in the tissues and been bathed in the tissue juices retain their power of adsorbing tubercle protein is a matter for further investigation, but the probability that they can do so is emphasised by the following facts as to the tuberculosis of coal-miners.

The lungs of anthracotic coal-miners often show tuberculous lesions of a peculiar type, characterised by an absence of the tendency to breaking down and cavitation so common in adult phthisis. Lesions of this peculiar type have recently been figured in the paper by the writer and Dr. Sladden, already referred to. The fairly frequent occurrence of these atypical non-cavitating tuberculous lesions in coal-miners is the more interesting in view of the known frequency of negative sputa in clinically tuberculous coal-miners.

The writer has encountered numerous cases where the diagnosis of tuberculosis has long remained in doubt owing to a series of "negative" sputum examinations, only to be established, at last, by post-mortem examination or by a positive result from guinea-pig inoculation; and case records in his possession establish the fact that negative sputa are commoner in clinically tuberculous coal-miners than in clinically tuberculous adult males of other occupations in the same district and over the same period.

If the relative exemption of coal-miners from tuberculosis be admitted, and it can hardly be denied, then this fact must be taken into consideration along with the further fact, newly established, that a large number of coal-miners develop pulmonary silicosis in the course of years spent in the industry.

The Economic Aspect.

Apart from its pathological interest, the question has an important economic aspect. At Johannesburg the gold-mining industry pays very large sums annually as compensation to miners found to be developing silicosis; and a superficial glance at the new facts on silicosis in coal-miners might foster the idea that in England and Wales the coal-mining industry ought to shoulder the same burden. But the essential risk for which compensation is paid in South Africa is the *risk of tuberculosis* which is bound up with the silicosis of gold-miners. Dr. L. Irvine,

Director of the Miners' Phthisis Bureau at Johannesburg, writes as follows (1929): "An uncomplicated silicosis may undergo prolonged and sometimes apparently indefinite arrest at any stage . . . but in the end infection tends to get the upper hand and, when this occurs, the greater the amount of original damage to the lung by silicosis, the more rapid will be the terminal breakdown. A measure of the extent of the predisposition to tuberculosis is afforded by the fact that, of all the deaths which have occurred in the two groups of cases (primary and antiprimary silicosis, S. L. C.), some 75 per cent. have been due directly to active tuberculosis."

In the case of coal-miners, this excessive liability to tuberculosis is absent. There is, if anything, a tendency to relative exemption from this disease. In this important respect, the coal-miner is in a much more favourable position than the South African gold-miner; and it is not unreasonable to lay stress on this difference at a moment when the recently elicited facts as to silicosis in coal-miners are before the public.

It would be rash to suggest that this condition of silicosis in coal-miners is free from risk. What tuberculosis is to the gold-miner, "bronchitis," perhaps, is to the coal-miner, and the high mortality from this latter cause in old colliers is, in all probability, closely associated with a life of exposure not only to coal dust but to stone dust as well.

But the word "silicosis" has come to imply a marked and formidable liability to tuberculosis, and is thus accepted in regard to "compensation" in "refractories" industries and in the gold-mining industry in South Africa. It is important to dissociate this implication from the word "silicosis" when it is applied to coal-miners.

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THE NEW ABERDEEN INFIRMARY.—The controversy as to whether this building should be erected of granite or brick has at last been settled by a compromise. The material is to be granite with concrete dressings, and the cost will be about £429,000. An all-granite building would have cost £479,000, and a brick one £415,000. The medical block will be the first unit to be erected, and it is estimated that by the end of the present year the money available will, with accrued interest, amount to about £383,000.

EFFECT OF RADIATION ON MACROPHAGES.

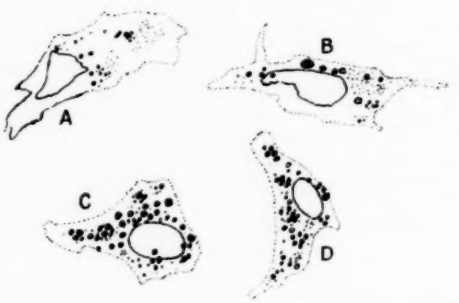
BY J. C. MOTTRAM, M.B. LOND.,

DIRECTOR OF THE RESEARCH DEPARTMENT OF THE RADIUM INSTITUTE, LONDON.

IN the connective tissue reactions associated with the disappearance of tumours produced by medical or radiological treatment macrophages are present and, in the opinion of some observers, play an important part. Todd,[1] in describing the treatment of cancer by lead selenide, insists upon the importance of "the junction tissue" as a defensive barrier, and includes the macrophage as one of its chief cell constituents. Macrophages are commonly present in both sarcomas and carcinomas; in tissue cultures they are conspicuous, since they are the first cells to migrate out into the medium. In sections of tumours which are regressing macrophages are seen filled with cell debris, and at the edge of areas showing necrosis they tend to accumulate. It is thus possible that macrophages pay a rôle in the disappearance of tumours, and on this account the effect of radiation on them has been observed.

In order to study the direct effect of radiation, advantage was taken of the accumulations of macrophages which occur around Jensen's rat sarcoma

FIG. 1.



A and B, macrophages close to the radium; C and D, from beneath the tumour at a distance from the radium.

and the mouse carcinoma T/63. These tumours were exposed in vivo for from one to two hours to β radiation, and then removed at varying periods up to 14 days. The animals were given daily inoculations of trypan-blue under the skin in order to stain the macrophages intra vitam. The tumours with the overlying skin were then removed, frozen sections cut, and counterstained with carmine. The radium applicator used was 59 mg. of radium element; area 2×2 cm., screen 0·12 mm. silver.

Since it takes two days to stain the macrophages, it is not possible to observe the effect of radiation during the first 48 hours. In two- and three-day specimens no change in the number of macrophages was seen. In these specimens the macrophages close to the radium between the skin and the tumour differed from those away from the radium on the underside of the tumour. These differences are shown in Fig. 1.

The deep macrophages appeared perfectly normal. The superficial radiated macrophages showed much

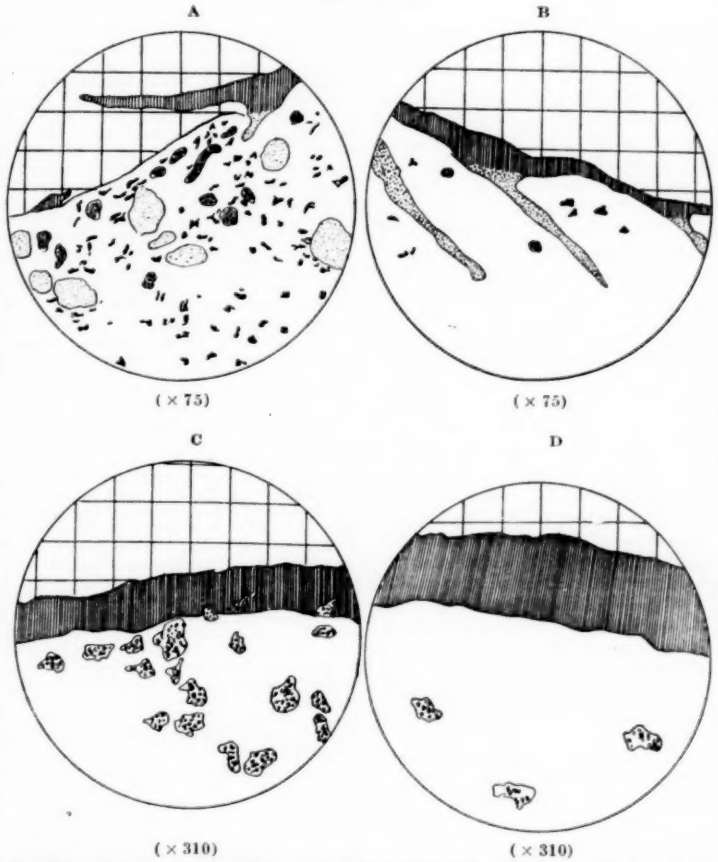
[1] Todd, A. T., et al.: Chemotherapeutic Researches in Cancer. London, 1928. See also THE LANCET, August 23rd, p. 389.

fewer granules of trypan-blue, and also the dye was present in the cytoplasm in minute granules like dust; the nuclei of the radiated cells were shrunken and crenated.

In four-day specimens the macrophages appear less numerous between skin and tumour than in non-radiated tumours. This may, however, be due, not to an absence of macrophages, but because they have failed to take up the dye. In those containing the dye the granules are few and small. No further change takes place until about the ninth day, when the epidermal cells of the skin and the tumour cells begin to show degenerative changes as a result of the radiation; then a local accumulation of macrophages takes place.

This accumulation is not very clearly seen around radiated tumours, since they normally show infiltration with macrophages, especially in the neighbourhood of areas of necrosis. In order to show this effect of radiation more clearly rat skin was radiated. Normally the dermis contains very few macrophages but on and after the ninth day after radiation it shows a great accumulation of these cells, as shown in Fig. 2.

FIG. 2.



Tracings made on to squared paper, using a squared graticule in the eyepiece of the microscope. Shaded area = epidermis; stippled area = hair follicles, degenerated in radiated specimen; areas containing circles = blood-vessels; black areas (or cells containing granules) = macrophages; A = skin, 12 days after radiation; C = 9 days after radiation; B and D = normal skin adjacent to radiated area. In A desquamation of the epithelium is occurring, and the capillaries are dilated. Note in C that the epidermis is being invaded by macrophages.

In specimens beyond about the twelfth day the macrophages contained cell debris derived from the degenerated tumour cells and, in the case of the skin, from the epidermis, hair follicles, and connective tissue cells.

These observations are probably of importance in the treatment of cancer by colloidal preparations, such as lead and lead selenide. It is likely that the macrophages will take up these colloids, just as they do dyes, and that thus tumours will become impregnated with the inoculated colloid. Since, therefore, radiation appears to interfere with the taking up of dye by the macrophages, inoculations of colloids should be given a few days before radiation, when these two kinds of treatment are combined. On the other hand, radiation causes a local accumulation of macrophages as soon as degeneration and necrosis begin. It might, therefore, be profitable to give colloid treatment about a fortnight after radiation under the assumption that the accumulated macrophages will bring much colloid to the tumour.

CONCLUSIONS.

(1) After radiation, macrophages do not take up trypan-blue so freely as normal macrophages. (2) About nine days after the radiation of tumours or of skin, at a time when degeneration changes set in, a local accumulation of macrophages occurs.

The radium used in this investigation was on loan from the Medical Research Council.

PRESENTATION HOSPITAL BEDS.—Lord Knutsford recently unveiled a commemorative tablet in Mellish ward at the London Hospital over a bed which is being endowed at a cost of 1000 guineas by the Paramount Philanthropic Society. This Society, which was founded in North London only two years ago, has already collected nearly £3500, chiefly from Jewish sources, and distributed it among 85 hospitals and kindred institutions in the Greater London area.—To celebrate its twenty-first birthday, the Nottinghamshire and District Bowling Association has endowed a cot, at a cost of £1000, in Nottingham General Hospital.

PUBLIC ASSISTANCE COMMITTEE AND RADIUM.—The Brighton public assistance committee have decided to purchase a quantity of radium at a cost of £1752. Mr. H. J. McCurrich, medical officer of the Brighton Infirmary, had reported to a subcommittee the need of the purchase, the more so as he found himself very much hampered by the system of hiring. The subcommittee agreed to the suggestion; also to obtain a loan for ten years to cover the cost. It was stated that the interest and sinking fund charges would amount to £237 per annum, and that the cost of hiring radium during the past 12 months was £134.

CLINICAL AND LABORATORY NOTES

MASTOIDITIS AS A COMPLICATION OF DIPHTHERIA.

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Diphtheria presents a marked contrast to scarlet fever in that in the former disease ear conditions as complications are uncommon and mastoiditis is now very rare. Rolleston [1] does not mention the latter condition as a complication of primary faucial diphtheria; nor is there any reference to it in the works of C. B. Ker,[2] of Allbutt and Rolleston,[3] or of Nothnagel.[4] Schamberg and Kolmer [5] state that otitis media is sometimes a complication, but they do not mention mastoiditis. In these circumstances the case here reported may be of interest.

Bane,[6] in his paper published in 1917, stated that "the literature of diphtheria of the ear is not voluminous." One of the earlier references to the condition was by Billington in 1889. In 1901 Lewin [7] published a long paper dealing with an investigation of 60 cases of diphtheria and of diphtheria with co-existent scarlatina. From his discussion of the literature it is evident that the majority of the cases reported up to that date were really cases of scarlet-diphtheria and not of genuine diphtheria. He showed from his examination of pathological material that diphtheritic affection of the ear was fairly common in an anatomical sense, though clinically the condition was often not recognisable. Lewin concluded that diphtheritic otitis was usually due to a blood-spread of the virus and not to a direct spread from the throat via the Eustachian tube. There is no reference to mastoid disease in Lewin's paper, though he does mention a case of leptomeningitis.

In 1907 Kerrison [8] reported the case of a female patient (aged 19 years) who was suffering from genuine diphtheria. Otitis developed on the sixth day, and on the twelfth day acute mastoiditis was unmistakable. At operation the vertical limb of the sigmoid sinus was exposed and sinus thrombosis followed. Part of the jugular vein had to be excised before the condition cleared. In 1911 Barnhill and Wales [9] divided the otitis media caused by the Klebs-Löffler bacillus into three classes—viz. (*a*) primary diphtheritic inflammation; (*b*) otitis arising by extension from the nasopharynx; (*c*) secondary middle-ear infection accompanying diphtheria of the throat—the most common form. In 1926 Gowen [10] investigated the incidence of otitis in 15,000 infectious cases at the Philadelphia Hospital for Contagious Diseases. He found that otitis occurred in diphtheria only when this disease was co-existent with scarlet fever and measles; the incidence of otitis was then 50 per cent. and of mastoiditis 12 per cent.

The literature all points to the conclusion that, while in an anatomical sense diphtheritic affection of the middle ear may be fairly common, a clinically recognisable acute otitis is infrequent. Further, this form of otitis very rarely spreads to the mastoid cells.

RECORD OF A CASE.

The patient (aged 12 years) was a high-school boy of excellent general physique. He was admitted to hospital suffering from diphtheria, and from the history he appeared to be in the sixth day of the illness. On the day of admission the throat swab was positive, showing organisms which were morphologically diphtheria bacilli.

When he was seen on admission he was desperately ill. The face was pale and the cheeks showed a pinkish flush. There was "bull-neck" enlargement of the cervical glands on both sides, and this appeared to be the cause of considerable dyspnœa; no rib recession was noticed, nor were there laryngeal symptoms throughout the course of the illness. The parotid glands were normal. Blood had dried on the lips, and there was a slight exudation of blood from the gums. Slight rhinorrhœa was present, and the nostrils were somewhat excoriated. Fœtor was marked. A dirty, foul-smelling membrane covered the whole of the left side of the fauces and soft palate and extended forward on to the hard palate. Membrane was also present on the right tonsil and on the pillars. The membrane was greyish in colour with black patches, and separation caused considerable bleeding. Œdema of the soft parts resulted in the uvula being pushed down into the throat. The heart was normal in size. The sounds were regular and pure, but soft. Apart from slight roughness of the respiratory murmur, the lungs showed nothing of note. The liver and spleen were not enlarged or tender, but there was some slight tenderness in the right iliac fossa. The abdominal reflexes and the knee-jerks were present, but not active, and the pupils were equal and reacted to light. There was no sign of any paralysis.

On admission the temperature was 100·4° F., the pulse-rate 120, the respiration-rate 24. The patient had received 6000 units of antidiphtheritic serum before coming to hospital. On admission, 30,000 units were given immediately by the intramuscular route.

On the day following admission (seventh day of illness) the temperature had fallen to 99·2° F., the pulse-rate was 104–120, and the respiration-rate 22–26. The membrane, though still very adherent to the fauces and tonsils, was now separating slightly from the soft palate. There was still marked fœtor, but the faucial œdema had subsided slightly. The patient now showed profuse, thick, sanguineous nasal discharge. The enlargement of the cervical glands was slightly less than on the previous day. There was no increase in the area of cardiac dullness and the heart sounds were regular, though rapid and somewhat soft. Palpation showed slight increase of resistance in the right iliac fossa, but the abdomen was otherwise normal. Examination of the lungs still revealed generalised roughness of the respiratory murmur. During the course of this day the patient again received 30,000 units of antidiphtheritic serum.

On the following day (eighth of the illness) there was a slight improvement in the general condition, and 24,000 units of serum were injected intramuscularly. On the ninth day of the disease the patient showed a very definite improvement. The colour of the face had improved and rhinorrhœa was now absent. The throat was cleaning rapidly, and the faucial œdema had disappeared. The heart sounds were rather soft, but there was no evidence of cardiac dilatation. The temperature was now 98° F., the pulse-rate varied between 104 and 120, and the respiration-rate between 16 and 20.

The progress was uninterrupted until the twenty-seventh day of the disease, when the patient vomited in the evening. On the following day there was a slight but definite enlargement of the liver, and the lower border of this organ was tender. The area of superficial cardiac dullness was normal. The heart sounds showed extra-systoles, but the tone was quite good. There was no epigastric pulsation. The pulse-rate varied from 108 to 120. On the twenty-ninth day epigastric pulsation was present, and the area of superficial cardiac dullness was enlarged to the right. Right otorrhœa developed on the thirty-fifth day. The discharge became rapidly purulent, but there was no tenderness or œdema over the mastoid process. On the thirty-eighth day palatal paralysis was noticed. This complication was very persistent and fairly marked. By the sixty-seventh day of the illness the patient's general condition had improved considerably and the heart sounds were normal. There had been no ocular or pharyngeal paralysis, and the palatal paralysis was then only slightly marked. The purulent otorrhœa still persisted, however, in spite of treatment. During this period there had been no elevation of temperature and there was at no time any œdema over the mastoid process. On the seventy-third day the temperature rose to 100·4°, and on the following day the patient had pain in the ear and a suspicion of œdema over the mastoid. The ear discharge remained copious and purulent.

During the next week the temperature oscillated between 98° and 101°. There was slight tenderness over the mastoid region, and the œdema became more marked but was never very pronounced. There appeared to be a possibility that

the condition would resolve without operative interference, and surgical advice upheld this view. Thereafter the temperature remained only slightly elevated (about 99°) until the eighty-seventh day, when it began to rise. The œdema and tenderness over the mastoid persisted but were never very marked. During this period swabs from the throat and from the right ear were negative for diphtheroid organisms. It became rapidly evident that the condition would not resolve without surgical interference. On the ninety-second day of the illness the patient was transferred to the Rotherham General Hospital, where the incomplete mastoid operation was performed by Dr. W. S. Wildman. At the operation considerable erosion of bone was found. Recovery was uninterrupted.

The patient was examined recently and was found to be in very good health. There was no evidence that he had ever had palatal or cardiac paralysis; the hearing was excellent, and showed no diminution on the side previously affected.

COMMENTARY.

The case is interesting in that the patient recovered completely, although he was extremely ill when he was admitted on the sixth day of the disease. During his illness he showed two types of diphtheritic paralysis, in addition to the otitis media and the rare mastoid complication. There was no evidence that an intercurrent disease—such as scarlet fever—was present and had caused the mastoiditis.

The insidious course of the ear condition is to be noted. The otorrhœa had persisted for 59 days and the mastoiditis for 19 days before the case came to operation. During this period the patient was not as ill as might have been expected. This slow but persistent progress of the pathological process in the mastoid antrum may be compared with the similar condition following scarlatina, in which the development is usually more acute. The mastoiditis appears to have been a true complication of faucial diphtheria, although definite proof of the interrelation was not forthcoming.

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THE SULPHUR TREATMENT OF DEMENTIA PRÆCOX.

By P. C. Collingwood Fenwick, L.M.S.S.A.,

ASSISTANT MEDICAL OFFICER, EAST SUSSEX MENTAL HOSPITAL, HELLINGLY.

During a course of research work at the East Sussex County Mental Hospital and the London County Council Mental Hospital, West Park, Epsom, I have treated 30 cases of schizophrenia with sulfosin, a preparation of sulphur in olive oil, as described by Knud Schroeder.[1] All the cases I have treated have been males, and their ages have varied from 13 to 33. Some were recent admissions to hospital, others had been in for several years and had shown no improvement. They were of all types and conditions—stuporous, katatonic, grossly demented, and impulsive. The treatment has been carried out over a period of a year, and so far those cases that have shown improvement have not relapsed. The following table shows the results at a glance:—

Number treated	.. 30	In statu quo	.. 12
Discharged as cured	.. 8	Still under treatment	.. 3
Greatly improved	.. 7		

Of those that were discharged from hospital, four had been in for over two years without showing any improvement, while the others were more recent admissions. Those classified as greatly improved were men who became clean in their habits and were able to show some keenness in the work of the hospital, and who before treatment had lived the lives of vegetables. Their discharge in the future is possible.

Technique and Dosage.—It has been my practice to use a 1 per cent. solution of sulphur in sterile olive oil, and to start the course of treatment by giving 1 c.cm. into the muscles on the outer side of the thigh and to increase the dose by 1 c.cm. until the patient has had 12 injections. As the temperature usually starts to rise about 12 hours after the injection, it is advisable to give the treatment at about 6 o'clock in the evening, so that the night's sleep is not interfered with by constant temperature recording, which is done every half-hour until the maximum is reached, and then every four hours. The fever is generally at its height about 18 hours from the time of the injection and may rise to 105° F., with or without rigors. In 48 hours it has usually returned to normal. Two injections are given each week, so that a full course takes six weeks, during which time the patient is kept in bed but is encouraged to occupy himself, which I think is an all-important factor. In the large number of injections that have been given in these hospitals not one case has shown the slightest inflammatory local reaction; the only complaint heard is of stiffness in the muscles into which the sulphur has been injected, but this passes off in a few days' time. It is advisable to warm the oil before using it, as it will then flow through the needle more easily. A three-inch needle is the most convenient to use.

In a few cases I have given a second course of 12 injections after an interval of about two months, but in no case has any further improvement been shown in the mental state.

Reaction.—When the temperature begins to rise the patient usually starts to sweat, loses his appetite, and in a few cases has become delirious, but these symptoms have never given rise to any real anxiety. In all cases there is a marked leucocytosis, and in one patient the white blood count rose to 73,600 at the height of his fever. The extent of the leucocytosis appears to give no indication of the ultimate prognosis. The liver does not seem to be affected by the sulphur, as there have been no cases of jaundice, and in every patient the van den Bergh reaction has been negative. The mental reaction has varied. One or two patients have definitely stated during their course of treatment that they thought the injections were doing them good and have asked for further treatment; others have lain like logs during the whole of the six weeks, whilst others have passed gradually from a world of phantasy to a world of reality but have needed constant guidance in their new world. It is of great importance to attempt to re-educate these schizophrenics on the days that their temperatures are normal during their course of treatment, and I think the good results obtained have in no small way been due to the interest and trouble that has been taken by the nursing staff.

One patient ran a temperature up to 102° F. for

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[1] The Lancet, 1929, ii., 1081.

MEDICAL SOCIETIES

MEDICO-LEGAL SOCIETY.

AT a meeting of this Society on Jan. 22nd Sir WILLIAM WILLCOX took the chair, and Dr. NATHAN RAW read a paper on

The Coroner's Verdict in Cases of Suicide.

The word "suicide" had, he said, first been used in 1736 by Hales, author of "Pleas and the Crown." In English it was almost always used in a criminal sense, and in law felo-de-se and suicide were one and the same thing, although an attempt to commit suicide was not an attempt to commit murder but a common-law misdemeanour which could be tried at the quarter sessions. Under certain social codes and in certain circumstances suicide had been honoured, but in Anglo-Saxon times it had been regarded as a crime against God and the church; a verdict of felo-de-se had meant that the suicide's goods and lands would be forfeited, the widow would lose her dower, and the body would be buried in some public highway with a stake through it. Now that these penalties had been modified, Dr. Nathan Raw argued, the word "suicide" should be expunged and the verdict should be "did feloniously kill himself," except on those rare occasions when there was sufficient evidence for the jury to add "not being of sound mind." The phrase "committed suicide whilst temporarily insane" was a contradiction in terms, for "to commit" in this sense meant "to be guilty" of a crime, which was impossible for an insane person. The suicide-rate in England was 9 per 100,000, but the number was steadily increasing, though there was a great decrease in the number admitted to prison for attempted suicide.

Mr. LLEWELLYN JONES said that if coroners kept to the letter of the law they would have in most cases to direct the jury to return a verdict of felo-de-se. One of the most useful of enactments was that which allowed a coroner to conduct an inquest without a jury. The coroner should sympathise with the friends and relatives and avoid returning a verdict which would cast a stigma on the family. The verdict of felo-de-se could have no deterrent effect. Publicity, especially for letters found on the deceased and the manner in which the act was committed, was most undesirable, for it victimised defenceless persons and induced unstable individuals to imitate the suicide. Attempted suicide had decreased, but successful suicides had increased, relatively and absolutely. Much could be done to reduce suicides by enforcing the restrictions on the sale of dangerous drugs.

Dr. MORGAN FINUCANE maintained that most suicides were due to melancholia and allied states, usually characterised by delusions. In disagreement with Dr. Raw, he preferred the verdict of "unsound mind," which, though perhaps not legally correct, was humane. He advocated in cases of attempted suicide a verdict of "guilty but insane," and the detention of the prisoner for treatment, for many melancholic patients repeated the attempt.

Dr. E. F. HOARE, coroner for the Lewes district of East Sussex, cited the case of a governess who had committed suicide because her fiancé could not afford to marry her. He thought that the man had acted reasonably and sensibly and that the girl's mind had become unbalanced. He had, he said, directed the press to withhold the name of the man, who had actually not heard of the suicide. When compelled to read letters, he restricted himself to extracts which threw light on the mental attitude of the deceased. Coroners were hampered in returning a verdict of felo-de-se by the uncertain attitude of some insurance companies; juries were apprehensive lest they should deprive the widow of her benefit. He doubted whether a coroner sitting without a jury could return a verdict of felo-de-se. Juries were apt to return the verdict of "unsound mind" in cases where the coroner might almost consider the act reasonable—as in the suicide of a victim of rodent ulcer—and to return felo-de-se in cases where the medical eye saw unmistakable signs of mental illness. He had great hope that the Mental Treatment Act would reduce the number of suicides by facilitating early treatment.

TRUTH THE BEST GUIDE.

Dr. LETITIA FAIRFIELD said that in the old days, when a family would sooner be branded with a crime or insanity than with a sin, the "unsound mind" verdict might have been preferable, but that nowadays families dreaded the stigma of transmissible illness. She had known cases in which a verdict of "suicide while of unsound mind" passed an unjustifiable and deleterious slur upon the hereditary mentality of a family, and in which children had grown up overshadowed by the fear of insanity although the suicide of the parent might have had, to a humane observer, a reasonable motive. Truth was probably the best guide in this matter. She considered that the coroner ought to say more about the mental state of a deceased who had exhibited undoubted text-book symptoms of insanity which had been ignored by the friends and relatives; for instance, when the deceased had been placed in a nursing home under wholly inadequate care instead of being given mental treatment. This was a definite evil which was responsible for many unnecessary deaths every year; she hoped that the Mental Treatment Act would abate it. The "suicide pact" was often associated with most pitiable circumstances and the survivor had often been punished sufficiently. Nevertheless, it was sometimes employed to rid the accused of an insoluble tangle, and the penalty could probably not be safely abolished altogether.

Dr. DORIS ODLUM regretted that the law had taken such a Draconian point of view. It imposed penalties upon the body of the offender after his death in much the same way as a child punished its toy for being

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some four weeks after he had finished his course. Mentally he showed marked improvement, and no physical signs could be discovered. He complained of nothing, and so a war-time diagnosis of P.U.O (pyrexia of unknown origin) had to be attached to his case-sheet.

Although it is recognised that cases of dementia præcox have periods of remission, during which they are well enough to return home, I think it is justifiable to try the sulphur treatment on all new cases, for no harm is likely to occur and in many cases progressive dementia may be prevented or at least hindered.

I am indebted to Dr. F. R. P. Taylor and Dr. Norcliffe Roberts, the medical superintendents of the hospitals mentioned, for kind permission to record the results of my investigations, and to Dr. Geoffrey Shera, pathologist to the East Sussex Hospital, for his help in performing the various laboratory tests.

broken. The only other explanation was that the penalties were meant to be deterrent, but no evidence existed that purely retributive measures ever deterred anybody. The State had therefore reached an impasse where the public were taking the view that a man had more or less of a right to kill himself if he wished to, and that it was wicked to visit his act upon his unfortunate relatives. Coroners' juries were therefore placed in the position of having to say what they really did not believe. Persons who attempted suicide were nearly always victims of profound emotional imbalance, though they were not always deluded, and it was reasonable to suppose that this generalisation applied also to persons who succeeded. Survivors should be treated, not punished. Fortunately, the Home Office directed the police to proceed very leniently in cases of attempted suicide, and a charge was not often made if it was possible to place the survivor under care. It was necessary to revise drastically and publicly the ideas underlying the legal attitude to suicide.

Dr. BENTLEY PURCHASE agreed that "suicide while of unsound mind" was a contradiction in terms, and stated that neither he nor Sir Walter Schroeder ever used the term "suicide" officially. It was not used on the official forms. A coroner sitting alone could not return a verdict of felo-de-se and was therefore inclined to seize upon evidence of earlier mental trouble.

Dr. KNYVETT GORDON suggested that gas companies should make their gas too obnoxious to be used as a means of self-destruction.

Mr. W. F. CHADWICK pleaded for the institution of a verdict of "justifiable homicide."

Mr. C. G. MORAN pointed out that insanity and unsoundness of mind were not the same thing. There was a legal definition of insanity and there might, for all he knew, be a medical one, but he had never yet known anybody to be of perfectly sound mind. The question was primarily one of policy, and a verdict of unsoundness of mind truthfully covered such states as emotional imbalance, hopelessness, and worry.

Dr. TEMPLE GRAY suggested the verdict "did kill himself when suffering from mental illness," which would include all but felonious suicide.

The CHAIRMAN deplored the ease with which educated persons could still obtain drugs of the barbituric acid group. The prevention of suicide was a matter for the psychiatrists, who should educate the public.

Dr. NATHAN RAW replied.

ROYAL SOCIETY OF MEDICINE.

SECTION OF ODONTOLOGY.

AT a meeting of this Section held on Jan. 26th the chair was taken by Mr. CARL SCHELLING, the President. Dr. A. A. OSMAN read a paper on the

Importance of Sugar in the Diet of the School-child.

The amount of sugar required by children of school age, had, he said, long been a matter of dispute. There was an almost universal craving among children for sweet things, suggesting an underlying physiological need, but there seemed to be some evidence of ill-effects from excessive consumption. The most important possible danger was damage to the teeth, and most of the objection to sweets had come from the dentists. Dr. Osman thought that the pendulum had been allowed to swing too far and that not a few children were suffering from relative sugar starvation. The young child was ceaselessly active during waking hours. Every little thing it did was done with its whole body and mind, and the output of energy was enormously greater than that of an adult. Clearly, then, an adequate supply of readily assimilable and easily combustible fuel was of great importance. The primary fuel of muscle was carbohydrate, and immediate needs were best met by the simpler types, the mono- and di-saccharides; the more complex poly-saccharides were used to replenish stores at leisure. Did not the child's craving for sweets arise from this very fact?

The symptoms of sugar deprivation could be divided into major and minor; the major symptoms were "bilious attacks" or "cyclical vomiting," which occurred between the ages of 4 and 13 and consisted of attacks of sickness with headache, fever, anorexia, and muscular prostration. There was usually constipation, sometimes succeeded by diarrhœa. There were three common causes: mental excitement, infection, and physical exhaustion, all factors making a rapid demand upon sugar reserves. A low blood-sugar was not the rule: rather the blood-sugar was maintained at a normal level at all hazards, only falling when the glycogen reserve of the liver was used up. Most bilious attacks were of this nature, and over 30 per cent. of children suffered from them. The minor symptoms of sugar shortage could be summed up in the word "fatigue." The child looked physically and mentally exhausted, pale, languid, depressed, with dark rings under the eyes, expressionless face, and listless stance. Such children were usually brought to the doctor for anæmia, headaches, flabbiness, fainting, constipation, "growing pains," or asthma. In many the symptoms had been aggravated by the provision of extra milk. Many had parted with their tonsils and not a few with their appendices, and artificial sunlight had been prescribed indiscriminately. All these symptoms cleared up when the sugar allowance was increased, and the gain in health and spirits was enormous.

A considerable proportion of the hospital class seemed to be suffering from some degree of acidosis, and apparently the importance of ketosis as a cause of symptoms in childhood had been unduly exaggerated. Certainly, neither ketosis nor hypoglycæmia was the constant biochemical abnormality in the subnormal child; acidosis was the condition found, and it disappeared when the sugar in the diet was increased.

No rules could be laid down for the amount of sugar required; it depended on the individual child. General directions to cut down fat and increase carbohydrate did not usually suffice; sugar must be supplied actively. Glucose had the advantage that it could be given as a medicine. The following prescription had been found successful in preventing attacks of cyclical vomiting in highly strung children: at all meals three to four teaspoonfuls of sugar per cup of weak tea or small glass of lemonade, a sandwich of bread and butter thickly spread with Demarara sugar and a similar sandwich at bed time; plenty of syrup, honey, and jam and fresh fruit; limited fat and milk; powered glucose in lemonade between meals, or boiled sweets, toffee, and candy without stint. Except diabetes, and possibly some cases of diarrhœa, Dr. Osman knew of no illness in childhood made worse by the addition of sugar to the diet, and was convinced that an enormous amount of chronic

misery and ill-health could be prevented if we were more willing to learn from the child than to teach him.

DISCUSSION.

Mr. F. W. BRODERICK agreed that an increase of sugar did not cause caries but cured it and improved the child out of all knowledge. He inquired whether Dr. Osman gave alkalis, and, if so, whether he gave them on an empty stomach so as not to upset the acidity of the gastric juice and prevent calcium absorption. He also asked how Dr. Osman treated the spots which came out as the result of sugar feeding.

Mr. W. L. BULLEID said that the idea that sugar could be held in solution against the teeth would not survive a moment's thought. He had habitually prescribed boiled sweets and glucose, which never did any harm and reduced susceptibility to caries, which was endogenous. Sugar was sometimes a wonderful prophylactic for the type of child whose nervous reactions made him a pest before, during, and after a party. Dental surgeons made the mistake of not differentiating sufficiently clearly between pure, soluble sugar and sticky sweets such as toffee and chocolate, which contained fat and adhered to the teeth. Boarding-schools were often to blame for sugar shortage in their dietary and for their restrictive regulations. Adults who suffered from travel sickness often benefited from doses of barley sugar.

Mr. G. T. HANKEY inquired whether there was any relation between calcium deficiency and sugar deficiency.

Dr. KINGSTON BARTON declared himself wholly on the side of the dental surgeons; he thought the mouths and stomachs of our children were being demoralised by sweets. The beet sugar which was so much used nowadays was much more deleterious than cane sugar. Sugar should be given in the form of food, but there should be an absolute taboo against sweets eaten promiscuously. The French knew the value of eau sucrée against thirst and fatigue, and explorers in all climates relied largely on sugar. Glucose was not a good form in which to give sugar, because it was likely to be impure. White sugar tended to constipate and brown sugar to relax, and a balance should be struck between the two.

Dr. R. P. GARROW doubted whether beet sugar was inferior to cane sugar. He inquired what Dr. Osman meant by extra milk and underfed children. The children who drank extra milk in the morning under the scheme of the National Milk Publicity Council benefited very greatly. No one could say what constituted a balanced diet, but milk was said to have a balancing effect.

Mr. A. T. PITTS said that the dental surgeon should adapt his views on dietetics to the general nutritional requirements of the child, but that dietitians should take account of some of the prevailing views on oral hygiene. He inquired whether Dr. Osman disagreed with the work of Dr. Corry Mann on children fed with milk. It was better to prescribe glucose than to allow the child to help himself to boiled sweets when he wanted to. He doubted the wisdom of giving children sweet sandwiches just before sending them to bed.

Mr. R. E. RIX inquired whether glucose ever produced epileptiform attacks in children with no previous history of fits.

Dr. E. W. FISH maintained that caries was an hereditary condition; it always occurred on the contact points of the teeth in permeable faults of the enamel, and not in spots which might have been affected by vitamin deficiency. Although accelerated by fermentable carbohydrates, it would occur in any event.

Mr. J. G. TURNER suggested that the real cause of much caries might lie in focal sepsis, especially of the nasal sinuses. Disease of the intestinal tract might produce an excess of carbohydrate in the diet by interfering with the digestion.

Mr. D. M. SHAW said that in children who normally did not get enough carbohydrate an addition of sugar to the diet was definitely beneficial.

The PRESIDENT remarked that certain races who ate no sugar had good teeth, but that Irish peasants developed bad caries on butter-milk and oatmeal. He had chewed sugar-cane as a child in Cuba, but had had no caries until his twentieth year.

Dr. OSMAN replied that alkalis had produced no results in acidosis, and that spots went away again if more sugar was given. Some children could not deal with an extra glass of milk in the morning unless it was balanced by a corresponding amount of sugar. He suspected that asthma and bilious attacks had increased in Dr. Corry Mann's children. Skimmed milk was as beneficial as whole milk. Fits caused by sugar must be very rare. Nasal sinusitis was not often seen in the out-patient department.

CASUAL COMMUNICATIONS.

Mr. J. E. CURNOCK described and illustrated by slides a cyst of the mandible which had occurred in a man who had been edentulous for 14 years before any clinical signs had appeared, and which was therefore probably not odontogenic; it might possibly have arisen from the ramus of the first branchial arch.

Mr. HANKEY described an unsuccessful attempt at replantation of two central incisors in a schoolboy. The teeth had been recovered immediately and placed in a solution of thymol for a few minutes before replantation, but in spite of the careful coöperation of the patient, and although X rays had shown no change for four months, osteoclasia had eventually set in.

Mr. TURNER said that he had succeeded in replanting teeth even after boiling them.

Mr. H. A. KENSHOLL suggested that infection had existed from the beginning but had not produced sufficient decalcification to show on an X ray film.

Mr. G. C. FRIEND inquired the most suitable solution to use in such cases.

Mr. HANKEY replied that sepsis had probably existed, but must have been very low grade. The solution used must not be too strong. Thymol was the correct drug to use, but the effervescent thymol tablets had probably been too weak.

SECTION OF MEDICINE.

AT a meeting of this Section on Jan. 27th Dr. R. A. YOUNG, the President, took the chair, and a paper on the prognosis and treatment of

Heart Disease Complicating Pregnancy

was read by Dr. CRIGHTON BRAMWELL (Manchester). In opening Dr. Bramwell remarked that the information on this subject in most current text-books was neither adequate nor up to date. One reason for this was that the obstetrician could hardly be expected to keep in touch with all the recent advances in cardiology, while the cardiologist, on the other hand, did not often have a chance of making a satisfactory study of these cases. He was often asked advice about treatment, or to give a prognosis, but he did not have the opportunity of supervising this treatment; often he did not hear whether his prognosis was correct, and there was nothing

so disastrous to progress as ignorance of one's mistakes.

The important question was whether, in the face of heart disease, the pregnancy should be allowed to run its course. (1) What was the immediate additional risk due to heart disease? (2) Would pregnancy and labour impair the woman's future health, by causing a permanent aggravation of the cardiac disability? If it were decided that the pregnancy should be terminated, how and when should that be done? During the last three years, at St. Mary's Hospital, Manchester, Dr. Norah Regan and he had been watching cases of heart disease through their later weeks of pregnancy, their labour, and the ensuing puerperium, and had been examining them at intervals afterwards to see whether the heart showed evidence of further damage consequent on the pregnancy. This paper was based mainly on 82 unselected cases showing all grades of heart disease—i.e., every patient attending the hospital during 18 months was examined for heart disease, and 79 were the result of examining over 3000 women at the antenatal clinic with three admitted as emergencies who had not been to that clinic. Being unselected this series approached the scientist's idea of a "clean experiment." Each woman was questioned as to any troubles in the present or previous pregnancies, especially as to congestive heart failure, with engorgement of the veins in the neck, enlargement of the liver and œdema of the feet, and cardiac enlargement. A six-foot X ray film of the case was studied, also the rhythm recorded. The patient was then brought at intervals of 14 days for examination during the remainder of the pregnancy. Particulars of her progress through labour, and any signs of cardiac distress were recorded by the obstetric officer in charge of the case and the speaker or his colleague saw the patient in St. Mary's Hospital at some time during the puerperium. The woman was asked to come for re-examination a month after the confinement, and thereafter every three months. Those who did not so report were visited in their homes. Owing to changes of address, he had lost sight of 12 of the 82 cases.

Ætiology.—In the 82 cases the ætiology was as follows: rheumatic fever, 20; chorea, 17; rheumatic fever and chorea, 10; patients who had had "rheumatism," 11; tonsillitis and growing pains, 11; mitral stenosis but no rheumatic history, 9; congenital lesions, 3; congenital heart disease in which there were no heart murmurs, 1. The severest cases were those who had had symptoms of heart disease prior to the onset of the pregnancy. Eleven of the women had bronchitis (in four it was of recent origin, seven of old standing). In three the bronchitis was an aggravating factor in the patient's cardiac condition. Strange to say, only 5 of the 82 cases had hæmoptysis. Two of these who had aortic incompetence in addition to mitral stenosis had been in poor health ever since the confinement. Hay and Hunt had a series of cases which showed 30 per cent. of hæmoptysis during pregnancy. Mitral stenosis was found in 67 cases, this being accompanied in 7 by aortic imcompetence. Mitral incompetence was diagnosed in 10 cases in which there was a definite rheumatic history and a loud systolic murmur in the region of cardiac impulse. One of these women subsequently developed renal toxæmia and so was delivered prematurely at the thirty-second week. None of the fatal cases had aortic incompetence. In six cases there was definite evidence of a fully developed congestive heart failure; three were admitted as urgent heart failure cases who had not been to the antenatal clinic. Two of these last-named six patients died, three had been in poor health since their confinement, their condition having been aggravated by the pregnancy, while only one of the six had done well. In five of the six cases the heart failure was not accompanied by auricular fibrillation; they were cases of failure with normal rhythm, contrary, therefore, to what was usually found in cases of rheumatic heart disease. Six patients gave a history of having suffered from œdema as well as dyspnœa prior to pregnancy, and they were expected to develop congestive heart failure during the pregnancy in which he and his colleague observed them. That proved true, however, in only two of the cases. It was difficult to account for the fact that in six patients who had heart failure when seen, only two gave a history of having had it prior to the pregnancy, whereas of six with a positive history two only developed heart failure. There were two possible explanations: (1) that the œdema of the feet of which the patients spoke might not have been of cardiac causation; (2) that the patients were not closely cross-questioned, and they might have forgotten that they had had œdema, hence the heart failure might really have been the second attack.

Fibrillation was the most grave of the cardiac disorders associated with pregnancy; Leyland Robinson, of Liverpool, published 18 cases of fibrillation, of whom 13 died, but 8 of the 13 had signs of congestive heart failure and were not under antenatal supervision, nor did they receive hospital treatment during their pregnancy. Hay and Hunt had four cases of fibrillation in their series with one death. Forty-three of the cases were delivered at full term, 25 prematurely (eight of them prior to the thirty-seventh week), induction was carried out in 12, and in two Cæsarean section was done.

Fatal cases.—Of five cases which died the first was a primipara aged 28, who was admitted to hospital because of hæmoptysis, and had a pulmonary embolism three days after her confinement; she had had dyspnœa and hæmoptysis prior to the confinement, and low blood pressure—namely, 100 systolic. The second was admitted as an urgent case because of heart failure. She developed fibrillation at the thirtieth week, and died from septic complications. The third was also admitted as an urgency with heart failure, and was delivered the day following admission, in her thirty-second week. She had had frequent attacks of acute pulmonary œdema both prior to and after confinement, and died from it six weeks after confinement. The fourth case was a primipara aged 21, who had heart-block, and died apparently of failure of the peripheral circulation, immediately after labour. The last case was that of a woman who had already borne 13 children, and she declined to carry out instructions and suggestions; she, indeed, seemed to have no wish to live.

Of the 66 cases of the series with whom contact had been maintained, and who were seen at intervals of from three months to two years, 27 had been free from symptoms since pregnancy, 36 stated that though they had now dyspnœa on exertion, it was no worse than prior to the pregnancy; in three the cardiac condition had clearly been aggravated by the pregnancy.

Deductions.—When definite œdema, enlargement of liver, moist sounds at the base of the lungs were present, one must expect trouble in the pregnancy; the same was true of patients with auricular fibrillation. Trouble was looked for in 13 of the 82 cases, but it was actually encountered

in only eight. Five of those died, in three the heart trouble was aggravated. On the whole, it could be said, as a result of the study, that the prognosis of heart disease complicating pregnancy was less gloomy than it was often held to be. Another feature was that the valvular lesions in this series had afforded no prognostic help; it seemed immaterial whether one was dealing with mitral regurgitation, stenosis, or aortic incompetence—i.e., as to whether the prognosis was good or bad in those cases. Most writers had laid grave stress on cardiac enlargement, and in his experience people who had large hearts did worse than did those whose hearts were not enlarged; several of his cases with cardiac enlargement, however, did well, though, on the other hand, three with enlargement were among the fatal cases. One could not, in dealing with prognosis, leave out of consideration extraneous circumstances; the woman in good circumstances would have little additional work thrown on her because of the child, but it was far otherwise with the poor.

Treatment.—The physician should, Dr. Bramwell thought, forbid pregnancy in cases in which there had been definite proved congestive heart failure in the past; also in the case of patients who had auricular fibrillation. Apart from the heart failure, there was a danger that they might get a cerebral or a pulmonary embolus. If the cases were not seen in time to warn against pregnancy, if seen early in the pregnancy the uterus should be emptied; or later still, Cæsarean section should be done. But emphatically the first thing was to treat the heart failure, and irrespective of the pregnancy. In less severe cases the patients should have prolonged rest and other precautions must be taken, then a labour could be successfully negotiated which might otherwise have been fatal.

DISCUSSION.

Dr. L. J. WITTS spoke of the frequency with which women with congestive heart failure died in labour of septic complications. He had even heard of women in labour with this heart trouble unexpectedly dying of tetanus, and he wondered whether Cæsarean section was advantageous on that account also.

Dr. C. MOIR also wondered whether, for these heart cases, spinal anæsthesia was best; in his own experience of such cases it had proved satisfactory. Many obstetricians said there was real danger if the child was born before the placenta was delivered, the idea probably being the sudden diversion of a large volume of blood from the uterine into the general circulation, so that there was a liability to sudden death at that stage. Therefore, it was advised that on no account should delivery of the placenta be hurried, one or two hours being allowed if necessary before the placenta was expelled. In such difficulty should not venesection be done?

Dr. WILLIAM EVANS expressed his surprise at the low incidence of auricular fibrillation in this series of cases; John Parkinson's series gave a considerably higher incidence. Many authorities held that the heart did not enlarge in acute congestive failure; the fact that the apex-beat shifted upwards might be due to the enlargement of the liver.

Dr. OLIVE RENDEL said that in a series of 200 cases which she had studied, not more than four had auricular fibrillation. Most of her cases were those of mitral stenosis, with or without aortic reflux. In that series there were four deaths, none of them due, except one, to auricular fibrillation, and that one had also malignant endocarditis. Two of her cases went into fibrillation after delivery. She asked what was Dr. Bramwell's prognosis in cases of hæmoptysis; her own view was that even a small hæmoptysis, certainly when repeated, constituted an indication for the termination of the pregnancy.

The PRESIDENT said he had been impressed by the way in which cases of heart disease weathered pregnancy and delivery Recently, there was admitted to his ward after delivery, a woman who had signs of congestion, mitral stenosis, and cerebral embolism. She developed some fever, and eventually died. She was found to have unsuspected right-sided infective endocarditis.

REPLY.

Dr. BRAMWELL said that Cæsarean section had the one great advantage that it could save the patient from the last month of her pregnancy, the worst time, and one could regulate the blood loss. With regard to anæsthetics, Mackenzie used to say there was nothing like chloroform for these cases, as he had no trouble with it, and the speaker thought there was still something in the advice. He would hesitate to agree to spinal anæsthesia in a case with a systolic pressure of only 100 or 105, but his practice was to leave the anæsthetic to the discretion of the administrator. He had not had experience of trouble due to quick delivery of the placenta. Fibrillation was liable to occur at any time in an old-standing case of mitral stenosis. When there was dyspnœa and heart failure seemed to be impending, the patient was brought into hospital for a period of rest and treatment, and with very satisfactory results.

NEW INVENTIONS

COMB DISSECTING FORCEPS.

THE comb dissecting forceps shown in the accompanying illustration has been made to my design. The comb end is rigid and the blades flexible. It embodies the principle of the well-known "Kelly's comb," and is most useful in performing the radical operation for cancer of the breast. After the fascia has been divided along the front of the axillary vein

with a light touch of the scalpel, the forceps is held in the reverse position and the comb sweeps the axillary contents away from the posterior aspect of the vein commencing at the apex of the axilla. Branches of vessels and nerves are displayed at their origin and clamped or preserved as desired. The proximity of the comb to the handle enables this to be accomplished with ease and precision. I have found the forceps useful for similar types of blunt dissection elsewhere, especially for stripping fascial or omental structures away from vessels, pedicles, ducts, and the necks of hernial sacs. The blades meet at the point only. The instrument serves the double purpose of dissecting forceps and Kelly's comb, so that one instrument less need be taken to a breast operation.

It is made in stainless steel by Messrs. Down Bros., Ltd., St. Thomas's-street, S.E.

W. SALISBURY, M.D., M.S. Lond., F.R.C.S. Eng.

Northampton.

REVIEWS AND NOTICES OF BOOKS

Sir D'Arcy Power's Selected Writings, 1877–1930.

Oxford: Clarendon Press. 1931. Pp. 368. 25s.

THIS handsome volume is made up of 16 selected essays and addresses by Sir D'Arcy Power, and its publication has been arranged by a group of friends to mark the occasion of his seventy-fifth birthday, which occurred in November, 1930. For more than half a century Sir D'Arcy has used his pen to forward and foster medical knowledge along many lines, technical, clinical, historical, and biographical, and the bibliography appended to the book ranges in the matter of dates from 1887 until to-day, containing more than 600 headings. Such a mass of material has required close sifting in order to reduce it to a reasonable size, and, while no doubt much has thus been eliminated which well deserved reprinting, there remains a series which is compact of wisdom and information delightfully conveyed, and which justifies an important manner of permanent record. The bibliography testifies to the number of baskets in which Sir D'Arcy Power has put his eggs, but the articles selected for reprinting have appeared mainly in the *British Journal of Surgery*, the *Proceedings* of the Royal Society of Medicine, and the *St. Bartholomew's Hospital Gazette*. Two of the articles, forming public orations, have appeared in full in THE LANCET, while others will have had their origin in or sustenance from the author's frequent contributions to the *British Medical Journal* upon medical history. Again the many and short biographies from Sir D'Arcy's pen of members of the medical profession, whose careers have warranted inclusion in the Dictionary of National Biography, will have been drawn upon to supply the wealth of historical detail displayed, though none of them is here in extenso.

The selected essays include the Hunterian Oration, delivered before the Royal College of Surgeons of England in 1925; a brilliant account of Harvey as a traveller contributed to the Historical Section of the Royal Society of Medicine; a documented history of the first 100 years of the Royal College of Surgeons, which appeared in a short-lived medical weekly entitled *The Physician and Surgeon*; and an address on the early origins of surgery in the United States, in which the connexions between the American pioneers and the science of the mother country is set out. These four papers illustrate well the accurate knowledge upon which Sir D'Arcy has built up his literary constructions and the graceful style with which they are adorned. Again, no better method of ascertaining what the medical profession has stood for, while the last five centuries were going by, could be suggested than the reading of such a story as the Vicary Lecture, delivered at the Royal College of Surgeons of England. Here is described the education of a surgeon when Vicary, in virtue of age and position was foremost, as the author points out, amongst a band of pioneer surgeons in the reign of Henry VIII. who desired to see their calling advanced from a trade to a profession. In this essay will be found notes upon the system of apprenticeship which prevailed with the Barber Surgeons Company at the time and for a further 250 years, and a short reference by the author to the abuses which at the end of the eighteenth and beginning of the nineteenth century brought the system into abuse, shows what a powerful incentive it formed to the reforming energies of Wakley and his coöperators when founding THE LANCET.

Other chapters of interest to all who would follow the evolving history of medicine—a study whose importance is receiving to-day more attention—are that on the Diaries of the Rev. John Ward, once the treasured possession of the Medical Society of London; that on the condition of Pepys's eyesight which led him suddenly to discontinue his journal; a learned presidential address delivered before the Section of Comparative Medicine of the Royal Society of Medicine, in which, among many other things, will be found an interesting note on William Kitchen Parker; and two papers dealing with episodes in the history of St. Bartholomew's Hospital.

This is a good book, containing much learning put lightly.

Die Chirurgie.

Edited by Prof. M. KIRSCHNER (Tübingen) and O. NORDMANN (Berlin). 1930. Berlin and Vienna: Urban and Schwarzenberg. Vol. II., Fascs. 26 and 29. M.18 and M.16. Vol. III., Fasc. 27. M.14.

THE section of this great work which describes the surgery of bones is written by Dr. Leopold Schonbauer, of Vienna. The physiology and structure of bone is first considered and then what is called the biology under which heading is included such general changes as osteoporosis and osteosclerosis. The chief value of this part of the book is that it describes a great deal of work which has been done upon the general pathology of bone and gives full references. The account is rather bewildering, since the author does not give a critical survey of what is known at the present day of the different subjects; but all the same the student bent on mastering the subject would find it difficult to discover a better guide to his reading than is here presented. The rest of the book describes the various diseases of bone and also fractures. It reaches a high standard and deserves praise, but there are some omissions. For instance, W. Orr's treatment of septic compound fractures is not described, though it was published five years ago, and some of the latest work on the relation between the parathyroids and osteitis fibrosa is not very fully dealt with. Some extraordinary illustrations of patients complete a very fine collection of pictures of rare bone diseases.

In Fasc. 29 Dr. A. Winkelbauer (Vienna) describes operations upon bones and joints. He gives a straightforward account of operations on these structures, including many very rarely performed, at any rate in this country, such as the Wladimiroff-Mikulicz osteoplastic resection of the ankle; but we could find no descriptions of the commonly performed subastragaloid and midtarsal arthrodesis, or of cuneiform resection for inveterate talipes equino-varus. In removal of the internal semilunar cartilage of the knee the author sees no objection to severance of the internal lateral ligament. He apparently holds that complete excision of the meniscus is necessary, in this respect departing from the teaching of English surgeons, who have probably had more experience of this injury than anybody in the world. Bone grafting is not very thoroughly dealt with. The illustrations are as good as in the other sections of this system of surgery.

Vol. III., Fasc. 27, is devoted to a complete monograph on the surgery of the spinal cord and its

membranes, by Dr. E. Heymann (Berlin). The work is extremely well conceived and carried out. Anatomy and physiology as the basis of neurological diagnosis are fully described in the first chapters and are followed by accounts of the various pathological conditions amenable to surgery. The neurological surgeon who seeks information on some points in the technique of diagnosis or operation, or desires to know the results of chordotomy or posterior root resection or other intervention will not be disappointed if he consults Dr. Heymann's book. Here again the illustrations are well selected and well drawn.

Tuberculous Intoxications.

By JOSEPH HOLLOS, M.D., Pathologist of St. Vincent's Hospital, Staten Island, New York. Edinburgh: E. and S. Livingstone. Pp. 132. 10*s*. 6*d*.

THIS book is an enlargement of the author's earlier book on "The Tuberculous Intoxications," published in Budapest in 1909. It is based upon the work of Carl Spengler on cellular immunity, the patients being treated with very weak dilutions of immunity substances extracted from the washed red blood corpuscles of immunised animals. The book has chapters devoted to symptoms of tuberculosis such as endocrine disturbances, neurasthenia, rheumatism, dysmenorrhœa and other menstrual disturbances, gastric and intestinal disturbances. We fear that clinicians are not likely to endorse a large number of the statements made therein; for example, "In the vast majority of cases rheumatic arthritis is nothing but one of the masked forms of concealed tuberculosis," and "The greatest part of menstrual disorders are of tuberculous origin, and they can be completely cured, or, at least, ameliorated through specific antituberculous treatment." A large series of cases is given which the author has treated with immune blood by Spengler's method.

Children of the Covered Wagon.

Report of the Commonwealth Fund Child Health Demonstration in Marion County, Oregon, 1925–1929. By ESTELLA FORD WARNER, M.D., and GEDDES SMITH. New York: Commonwealth Fund Division of Publications. 1930. Pp. 123. $1.

Cross-Sections of Rural Health Progress.

Report of the Commonwealth Fund Child Health Demonstration in Rutherford County, Tennessee, 1924–1928 (HARRY S. MUSTARD, M.D., Director, Rutherford County Demonstration). New York: Commonwealth Fund Division of Publications. 1930. Pp. 230.

IT is the policy of the Commonwealth Fund to inaugurate and conduct for a limited period in any district some service which appears to be needed there, with the object of demonstrating that need and how it can be met. In pursuance of this policy an intensive campaign for the betterment of health in Marion County, Oregon, U.S.A. was carried on during the years 1925 to 1929 inclusive. In a little book Dr. Warner and Mr. Geddes Smith describe the procedure adopted by the Fund, the staff and equipment required to carry out the scheme, its total cost, and the apparent effect of the efforts. The machinery set up was that which would be regarded in this country as the normal organisation of a progressive rural area, including medical staff, dentists, inspectors, nurses carrying out the duties of school nurses and health visitors, and the necessary clerical assistance. Special attention was devoted to the care of expectant mothers and young children, and an intensive and successful campaign was conducted in order to induce the public to accept immunisation against diphtheria. All this is described in popular language. The book is beautifully produced and contains a large number of admirable photographic illustrations. For the guidance of those who are specially interested in public health administration, tables showing the movement of various case-rates and death-rates in the county during the ten years, 1920 to 1929, are included in an appendix. These figures show that the mortality due to childbirth, the infant mortality (and notably the neonatal mortality), the mortality from most of the communicable diseases and the incidence of the latter have declined to a greater extent during the period than they have in the State of Oregon and in the United States registration area generally. The record of this work should be a stimulus to the health authorities of similar areas in America and throughout the world. That it has proved so locally is evidenced by the fact that the organisation is being officially carried on now that the work of the Commonwealth Fund is done.

The second book is also the result of a demonstration carried out in a rural area by the Commonwealth Fund. In this instance it was conducted for five years ending December, 1928, in Rutherford County, Tennessee. The same objects were aimed at as in Marion County, Oregon, and a similar procedure was adopted. The results appear to have been equally successful and the demonstration has had the effect not only of persuading the county health department to carry on the scheme out of public finances, but also of stimulating the public health programme of the whole State.

Therapeutic Uses of Infra-red Rays.

By ANNANDALE TROUP, *M.C.*, M.B., Ch.B. With foreword by Sir WILLIAM WILLCOX, K.C.I.E., C.B., C.M.G., M.D. London: The Actinic Press, Ltd. 1930. Pp. 57. 5*s*. 6*d*.

THIS small volume is not a text-book, but is a clear elementary exposition of infra-red therapy, written for his colleagues by a general practitioner. It will be found useful by those not acquainted with the principles of radiant heat therapy, who require an introduction and practical help in choosing apparatus. The treatment of the subject is elementary throughout and there are few references to the literature.

Dr. Troup has had some years' experience of infra-red therapy and is an enthusiastic believer in this form of treatment. In his experience the relief of pain was one of the most constant and gratifying results of its application. Improvement was noted in cases of chronic rheumatism, rheumatoid arthritis, neuritis, and in acute local inflammatory conditions such as boils and carbuncles. It would be of interest to compare the improvement observed in the nutrition and function of paralysed limbs after infra-red irradiations with that noted after treatment with the diathermy current. A comparative series of cases would be of especial value. On theoretical grounds it seems doubtful whether the superficial heating of the tissues obtained by infra-red irradiation is likely to give results as good as those obtained by diathermy.

THE LANCET.

LONDON: SATURDAY, JANUARY 31, 1931.

RADIOGRAPHY OF BLOOD-VESSELS.

By using a new opaque medium and modifications in technique, three Japanese workers [1] seem to have overcome some of the difficulties encountered in previous attempts to make blood-vessels visible in vivo. Hitherto the outstanding work in this field has been done by Egas Moniz, of Lisbon, whose paper on arterial encephalography, published in France in 1928, contains many radiograms illustrating the successful use of a 25 per cent. solution of sodium iodide for the localisation of cerebral tumours.[2] The Japanese writers pay perhaps insufficient tribute to this work of Moniz, for, apart from a brief acknowledgment of priority, their chief reference to it is the unwarranted statement that his method is so painful as to require general anæsthesia. It is true, however, that there are serious objections to the use of sodium iodide. Moniz admits the occurrence of epileptiform attacks, and, in two cases, of hemiplegia, following the injection, which he ascribes to impurities in the chemical used. Others have noted more or less grave accidents, pain, gangrene, and iodism after the use of sodium iodide, so there is plenty of room for an improved medium. The one now described, which is called L'ombre, is a fine emulsion of iodised oil in which the oil particles are of corpuscular dimensions. This obviates the risk of oil embolism inherent in the use of ordinary lipiodol. The preparation is comparatively easily made, and has been used in 130 cases without ill-effects, not only for encephalography but also for studying the state of the circulation in the limbs in cases of gangrene, fracture, varices, and aneurysm. It is recommended that the injection should be made into a branch of the artery which it is desired to show, this branch being exposed by dissection under local anæsthesia. Thus for cerebral arteriography the superior thyroid is selected, while in the limbs the ulnar collaterals, the external pudic, and the articular branches to the knee are used. This procedure seems to err, if anything, on the side of caution, since it has been proved that direct puncture of the main artery has no untoward effect.

The radiograms published are few but convincing. Especial interest attaches to the cerebral arteriograms, and attention must be drawn to the technical difficulties. For example, the radiogram must be taken at the instant of injection, for the medium is rapidly dispersed; exposures of one-tenth of a second are necessary, and stereoscopic views, even with rapid plate changers, will probably be unsatisfactory, showing a different degree of filling in the vessels in the two films. Asepsis demands an efficient X ray apparatus in the surgical theatre, and each side must be separately injected. In the field of interpretation there are also limitations. The arteries shown include the stem of the internal carotid and the middle cerebral of one side only. The anterior cerebrals are rarely well seen, and the posterior cerebrals are, of course, supplied by the vertebral arteries, and therefore invisible. It is, therefore, to be expected that only frontal, fronto-parietal, and temporal lobe tumours, which are relatively easy to find by other methods, will reveal their presence by displacement of the vessels concerned. The side of the lesion must previously be determined if double injection is to be avoided, and the method can give no answer to the important question whether the lesion is supra- or infra-tentorial. Ventriculography, which allows a more leisurely and methodical investigation, provides an answer to many of these questions, and also gives valuable indications at the actual operation; so the new method will probably supplement rather than supersede it. Used alone, it might, moreover, give erroneous indications. It is conceivable, for instance, that dilated ventricles displaced towards the injected side by tumour of the opposite side might so distort the vascular trunks on the injected side as to give an entirely false localisation. T. de Martel,[3] commenting on eight cases examined by the method of Moniz, says that in two of them the method gave useful information, while in the others operative verification was unsuccessful or not undertaken. He thinks that arteriography may be useful in the case of tumours which are certainly supratentorial, but in which the cerebral localisation is not precise.

It is not easy to see what advance in the diagnosis of cerebral disease can come from arteriography, but possibly it may have a definite value in the investigation of angiomatous tumours in which surgery has little to offer at present except removal of bone overlying the tumour so as to make it more accessible to radiation therapy. In the accurate diagnosis and localisation of such tumours the new method may be of definite assistance, for it should show their vascular structure and thus differentiate them from endotheliomata of the dura, which also reveal their presence by a bruit. In neurological surgery it looks as if the field of usefulness of the method would be narrowly circumscribed, but its possibilities for the investigation of the peripheral circulation should be of interest to the physiologist as well as the surgeon.

[1] Saito, M., Kamikawa, K., and Yanagizawa, H.: Amer. Jour. Surg., 1930, x., n.s., 225; Presse Méd., 1930, xxxviii., 1725.

[2] Presse Méd., 1928, xxxvi., 689.

INDIVIDUAL PSYCHOLOGY.

The psychoneuroses are not a modern product, though only within recent years has a change in our outlook led to their systematic study and a recognition of their social and individual importance. The first serious blow to older conceptions came from Pierre Janet, who made exhaustive

[3] Bull. et mém. Soc. nat. de chir., 1930, lvi., 313.

studies of the mental aspect of those states that are still called functional nervous disorders. Almost simultaneously FREUD introduced a psychopathology which, in spite of its difficulties, is becoming more and more applied to the understanding of those manifestations. The study of the subject received a stimulus from the numerous psychoneuroses that arose in the late war, and a flood of popular books indicated that interest in it had reached the public; the growth of the mental hygiene movement and the establishment of special clinics are to some extent the result of the interest then aroused. As a further result many neurotic sufferers, who typically express their troubles in physical symptoms or terminology, are now ready to set aside "nerves" and its diagnostic congeners and to recognise their troubles as emotional difficulties of reaction or adaptation. Practitioner and patient are now faced with a problem, for the former's training has not fitted him to deal with this aspect, the few clinics are overcrowded, and time and expense limit the function of the specialist.

The address on the structure of neurosis given by Dr. ALFRED ADLER to the Section of Psychiatry of the Royal Society of Medicine [1] bears directly upon this problem. Dr. ADLER, who claims for his views the title of "Individual Psychology," follows the methods of persuasion already laid down by DEJERINE and sees in the neuroses a false solution of the problems of life, to be remedied in the adult patient by convincing him of his lack of social coöperation and training him to coöperate first with the doctor and then with others. This principle of coöperation is elaborated into an ethical system in an address printed elsewhere in this issue, but whilst freely recognising the value of ideals in social life we approach somewhat critically a claim to have solved once and for all the problem of the neuroses. If we compare ADLER'S pathology with the matter contained in Dr. E. G. HOWE'S lectures, now appearing in this journal, we are at once struck by its easy appeal. Science demands, says ADLER, logic, common sense, and experience, and the experience drawn upon by him is within the understanding of any intelligent person, however ignorant of psychopathology. The difficulties of investigating and understanding unconscious processes do not exist for his readers, who are asked to do no more than judge the neurosis by the standards of everyday needs and desires. Obsessions and compulsions, phobias, morbid anxieties, somatic hysterias, all are explained by the same easily understood conception. It is a pre-analytic, a naked-eye pathology. By its aid the neurotic patient can be given a formula that covers every symptom and carries with it the lesson that his troubles are an escape from social responsibilities, and with this lesson emotionally accepted—here the physician's technique plays a part—he can be helped towards a useful life. That the formula covers only a part of the mental processes concerned, the part already recognised as the secondary aim of the neurosis, is immaterial. DEJERINE, discussing mental and moral foundations, wrote [2]:—

> "It would indeed be altogether too naïve to think that the psychotherapist has at his command a special mode of reasoning, unknown before his time, a dialectic of invincible power. It is the confidence he inspires, it is the way of saying it, that leads to success."

We can see how the qualities, even the defects, of individual psychology meet some of the needs of the situation. Containing some essential truths, easily comprehended, all-embracing, and with the appearance of finality, it leaves no room for doubt on the part of those who accept it; the first essential of persuasive therapy is established, for confidence inspires confidence, and among the many neurotic sufferers crying out for help there is scope for the application of this simple and sometimes effective mode of treatment. Yet there is great danger in the claim of individual psychology to furnish a complete pathology of the minor, and, apparently, of the major psychoses. It is well known that ADLER'S views owe some of their prominence to the fact that they are in opposition to those which find that sex plays an important part in the psychoneuroses. One potent factor, for example, is believed to be our emotional taboos and inhibitions, which are independent of the needs of ethical or social training and fall with especial severity upon the child. This factor either does or does not exist, and if it does exist it must be recognised, however great may be the social reaction against that recognition. For an ex-member of the Vienna Psycho-analytical Society to address a medical audience on the structure of the neuroses without mentioning sex is a *tour de force* that makes us wonder how and why it is done. Whether in its emotional inhibitions or in other ways society is responsible for thrusting upon its individual members conditions from which neurosis must inevitably result is a question to which a positive answer is likely. Recasting an old maxim, we might say that every society has the neuroses it deserves. The danger as well as the attraction of individual psychology is that it offers an easy escape from the difficulties of understanding modern psychopathology and a means by which we can avoid the consideration of probable cracks in the armour of our social self-satisfaction.

[1] THE LANCET, Jan. 17th, p. 136.

THE SOURCE OF PUERPERAL INFECTION.

IT is now some years since hæmolytic streptococci were definitely indicted as the chief agent in the ætiology of puerperal fever, although other cocci, the colon bacillus and certain diphtheroids were known to cause infection occasionally. Subsequent work has only increased the weight of the charge against the streptococcus. The identification of the principal offender did not, however, complete the story of the crime, and much controversy has raged around the problem of the source of infection. A group of workers headed by Mr. VICTOR BONNEY has maintained that the infection is mainly

[2] Psychonévroses. Dejerine and Gauckler, Paris, 1911, p. 427.

endogenous, while many others hold that it is often, primarily, or always exogenous. Recent work by Dr. JOHN SMITH at the City Hospital Laboratory, Aberdeen (summarised at p. 264 of this issue), supports those who believe that infection is generally introduced from without. He examined 18 cases of puerperal fever and three cases of septic abortion and studied the serological types of the organisms found. Of 13 cases of puerperal fever infected with *S. hæmolyticus* the strains came from an extrinsic source in 12. In no less than 11 cases of puerperal fever and one of septic abortion the infecting strains were traced to the throat or nose of the doctor, student, or nurse in attendance. Since the work of G. F. and G. H. DICK on scarlet fever, a great deal of bacteriological research on hæmolytic streptococci has been initiated. The Dicks have maintained that *S. scarlatinæ* is a special type of organism toxigenically different from other types, and other workers have claimed that erysipelas and puerperal fever respectively also have their own peculiar strains. More recent work, however, has failed to support the suggestion that the strains from different diseases produce different toxins. It has been shown that the toxins from various strains can be neutralised by scarlet fever antitoxin or, indeed, by antitoxins prepared for puerperal fever or erysipelas. It therefore seems probable that these organisms are very prevalent and that they must be harboured normally in some part of the human body. Nobody will dispute the statement that the nose, tonsil, and nasopharynx are the lair of the culprit. D. J. DAVIS declares that hæmolytic streptococci are found in from 10 to 60 per cent. of normal throats and that in susceptible persons this source of infection may cause disease through any form of contagion by droplet or spray infection.

The measures to be taken to prevent puerperal infection depend on its origin. Those who believe that it is due to contamination from the patient's own bowel have naturally suggested a régime of sealing-off the anus in some way. That their attempts have not been wholly successful is at least partly due to the grave difficulties put in their way by Nature herself. To attribute puerperal infection to this natural neighbour of the genital tract is to accuse Nature of a carelessness and recklessness towards natural processes that she does not often show. At one time she was accused of surrounding the birth orifice with a collection of hairs calculated to introduce infection despite the most elaborate precautions. Why 99 per cent. of women did not suffer through this mistake was never quite explained, but the hair was duly shaved until somebody pointed out that, so far from introducing infection, the hairs drained it off. This latest work of Dr. SMITH suggests that, once again, it is not the anatomy of the parts that is at fault, but the interference of man. Interference in these civilised days may be unavoidable, but it is our business to make it as perfect as possible. Dr. SMITH suggests that it may not at present be feasible to examine the throat and nose of every person in attendance, but that at least doctors and nurses might take suitable precautions by adequate masking. Any septic focus in patient or attendant should also be carefully investigated. Hospital maternity beds should be isolated by metal or glass screens and no patient should be examined or treated in the common wards. Dr. SMITH is confident enough to state that as soon as the extrinsic source of the bulk of puerperal infection is realised, and a satisfactory surgical technique is evolved, a large decline in the number of cases is bound to follow.

ANNOTATIONS

PREGNANCY AND TUBERCULOSIS.

OPINION continues divided as to how far pulmonary tuberculosis is worsened by pregnancy and parturition; to what extent therefore, and at what period of pregnancy, an artificial termination should be induced. Some would leave these cases rigidly to Nature, believing that a natural delivery is always less harmful than one that is induced; others would resort to Cæsarean section, which affords the opportunity of sterilisation at the same time. Opinion is again divided as to the advice to be given concerning marriage, conception, and lactation; more attention should perhaps be paid to the improbability of the advice being taken, if it is contrary to the desires of the patient. In Gibbon's words, advice may be feeble to stem, if strong and irresistible to impel. During latter years the induction of artificial pneumothorax during pregnancy has been sharply discussed, and no doubt as the practice of collapse therapy extends it will be more employed on pregnant women; our verdict on this, as on that of artificial pneumothorax in general, must await the passage of time with the analysis of unselected hospital figures.

Recently H. B. Matthews and L. S. Bryant have investigated,[1] by letter of inquiry, the question of pregnancy, parturition, lactation, and menstruation in 1000 tuberculous women under comfortable circumstances. Less than half responded but from 484 replies, which were considered sufficiently full, certain conclusions were drawn. It was decided that pregnancy had a harmful effect on tuberculous women and that this was more serious if the disease was advanced. Patients who did not become pregnant until three years or more after their discharge from sanatorium, and who (on their own showing) carried out their instructions conscientiously, fared better than the others. Spontaneous abortion and post-partum hæmorrhage occurred more frequently in these patients than in the normal population. Among the live births there was an infant mortality of 4 per cent., but 91 per cent. of the survivors were healthy normal children; 71 per cent. of mothers nursed their babies. For this information we may be grateful, while recognising the pitfalls of the research by questionaire which is becoming so popular. We are not told that these patients' medical advisers concurred in their statements, for the inquiry was made from the patient herself; much might have been gathered from the story of

[1] Jour. Amer. Med. Assoc., 1930, xcv., 1707.

the 500 and over who did not reply. As the inquiry concerned ex-patients only it ignored that class of case when the onset of disease occurs during pregnancy or after parturition. W. B. Hendry [2] has discussed the treatment of pregnant women and stated his belief that they should be left alone unless the lesion is active, in which case the pregnancy should be terminated during the first three months. After the first three months he regards the prognosis as grave whatever course is adopted, but it may be safer to allow the pregnancy to pursue a normal course, shortening the second stage of labour by the use of forceps or pituitrin, or by performing Cæsarean section under local anæsthesia. He sums up the situation thus: "When an active lesion is present in an unmarried woman, advise against marriage; when the patient is already married, advise against pregnancy; when pregnancy exists in the earlier months, advise its termination; when it has passed the third trimester, watch and pray." At the British Medical Association meeting held at Nottingham a few years ago R. A. Young produced a similarly epigrammatic summary: "If a virgin no marriage; if married no pregnancy; if pregnant no confinement; for the mother, no suckling."

At a joint meeting, reported in our last issue (p. 186), of representative obstetricians and those especially engaged in tuberculosis work, it was agreed that at least 50 per cent. of women with active tuberculosis are made iller by parturition, and that it is difficult to differentiate the effect of pregnancy from that of parturition. It is, therefore, safer for a woman with active tuberculosis not to bear children. If, however, she is already pregnant the attending physician has to decide whether the pregnancy should be interrupted or allowed to terminate naturally, bearing in mind that there are some tuberculous women on whom pregnancy has no deleterious effect, and a few whose condition seems improved by childbearing. In each case it has to be considered whether an artificial termination will be less harmful than the normal event to that patient; and here we have a conflict of evidence and an insufficient number of published cases finally to decide the point, for it is important to be guided, in this as in other matters, by actual experience rather than by the opinions of great men. If a living child is born the next problem is whether the infant should be breast-fed and for how long. It seems clear that most infants gain from breast-feeding and that the mothers do not lose, provided lactation is not prolonged. Breast-feeding should therefore be the rule unless contra-indicated in the individual instance by the risk of infection from a woman with an open lesion; the period of lactation might be limited to six months. On the liability of the children of tuberculous mothers to become infected the data are conflicting; the figures of Matthews and Bryant, referring to the 48 per cent. of good-class mothers who replied to a questionaire, can hardly be taken as applying to the bulk of the population. Nor do figures dealing with babies provide information as to their fate in later life, for they not only risk infection but also inherit a poor resistance. Other factors in the problem are worth attention. Ernest Ward showed that in 21 per cent. of 240 pregnant tuberculous women the onset of disease occurred during pregnancy or after parturition, and that of these one half died within a few years, the prognosis being far worse in their case than in those whose disease antedated pregnancy.[3] If pregnancy is to be interrupted such cases might have to be considered especially suitable. Marriage apart from conception usually improves a patient's health, and advice on contraception might be efficient where advice against matrimony would be futile. In any case, it may be better to counsel a possible postponement than attempt to impose an impossible prohibition. There must, we think, be a freer interchange of experience, some remoulding of individual beliefs, and a larger body of observed facts at disposal before valid conclusions are reached.

[2] Canad. Med. Assoc. Jour., 1930, xxiii., 805.
[3] THE LANCET, 1923, ii., 557.

AN INDEX OF RENAL EFFICIENCY.

THE drawback of most of the tests of renal function is that they require special technique or equipment. Herein lies the chief advantage of the "dilution and concentration" test. The patient empties his bladder at 7 A.M. and then drinks 1000 c.cm. of water within about ten minutes. The urine is collected hourly for four hours and then two-hourly till 7 P.M. Fairly dry food is allowed for meals but no fluid until 7 P.M. and then only enough to allay thirst. The normal kidney eliminates the whole of the ingested fluid in the first four hours with a lowering of the specific gravity of the urine to 1005 or less; after the first four hours the specific gravity gradually rises to 1020 or more. Failure to secrete the ingested fluid in the four hours or to produce a marked fall in specific gravity with subsequent rise indicates impairment of renal function. Brink [1] reports very favourably on the clinical value of this test. Buck and Proger [2] have compared it with the other tests of renal efficiency in 100 cases and find it not only more easily performed but also a more sensitive index of renal damage. They have further simplified it for the benefit of ambulatory patients, so that the only specimens of urine examined are the one passed two hours after the water is drunk and the one passed on rising the following morning. If the specific gravity of these specimens shows good dilution and concentration respectively, no further examination is necessary, but if this test is unsatisfactory the case requires a more complete investigation.

[1] Brink, C. D.: Clin. Jour., Jan. 7th, 1931, p. 6.
[2] Buck, R. W., and Proger, S. H.: New Eng. Jour. of Med., Dec. 25th, 1930, p. 1283.

SCOTTISH FAMILY DIETARIES.

THE purely quantitative aspects of nutrition no longer occupy the pre-eminent position that they held 20 years ago. This is easily understood when we consider the striking demonstrations that have been made in recent times of the value of specific food constituents in animal nutrition. Yet the problem of how much protein, fat, and carbohydrate a man should take to maintain himself in a state of health has by no means lost its devotees. By the method of direct experiment with individuals and small groups of men it has repeatedly been shown that very great variations in the proportions of these constituents are compatible with normal health and efficiency. Nevertheless a systematic study of the amounts of these classes of foodstuffs habitually consumed by a given section of any community may be of academic interest even if its immediate practical bearing is not at once obvious. Such a study has just been reported by Prof. E. P. Cathcart, F.R.S., and Mr. A. M. T. Murray, Ph.D.[3] St. Andrews was

[3] A Study in Nutrition. An Inquiry into the Diet of 154 Families of St. Andrews. Med. Res. Council, Spec. Rep. Ser. No. 151. H.M. Stationery Office. 1931. 1s.

chosen for the investigation as representing a relatively well-to-do community, and among the 154 families whose household budgets were scrutinised all classes of society from the richest to the poorest were included. The diet had an average energy value, reckoned on the basis of the adult man, of 3119 calories and contained 89 g. of protein, 119 g. of fat, and 411 g. of carbohydrate. The most striking feature of this analysis is the high proportion of fat, which is more than double the amount commonly accepted as the standard for a European. Yet, curiously enough, the composition of the diets studied on this occasion is almost identical with that of the average diet in the United States. It was noted that although the amount of protein in the diet increased with a rise in the family income, the proportion of the total energy supplied by protein was remarkably constant in all the groups studied. The amount of fat, on the other hand, increased both absolutely and in proportion to the total energy value with any increase in financial resources. Further problems that are discussed include variations in the composition of the diets according to the social class and occupation of the householders and the efficiency of the parents. The general impression is gathered that the population of St. Andrews can be regarded as being well nourished, suffering neither from gluttony nor food shortage.

EFFICACY OF SERUM IN DIPHTHERIA.

FOLLOWING a complaint by practitioners in the north of France that antidiphtheritic serum, although given in larger doses, is much less efficacious than previously, an inquiry was instituted by the Commission of Serum and Vaccines of the Ministry of Public Health. The conclusion arrived at was that the serum is not to blame. J. Lignières, in a "contribution to the study of the causes of insufficient activity of antidiphtheritic serum"[1] has reviewed the facts and produced some valuable comments. In recent years, he points out, the dose of antitoxin in the treatment of diphtheria has considerably increased. Thus in 1894, when serum therapy was started and for a few years afterwards, only 40 c.cm. of serum was given on the first day to severe cases, and the total injected throughout the treatment did not exceed 80–90 c.cm. At the present day in France the usual amount is about 300 c.cm. of unrefined serum. Translating these quantities into Ehrlich units of antitoxin, 1500 units were formerly given in severe cases, whereas now 100–200,000 units are normally injected and this amount is exceeded in serious cases. In the United States and Argentina still larger doses are given.

In view of the general tendency to increase even these massive doses of antitoxin, it is imperative to consider whether such large quantities are really necessary to get satisfactory results, and at the same time to remember that these results are not superior to those previously obtained with weaker antitoxin. Why therefore is a much more powerful antitoxin needed? Various suggestions have been made, based on the lateness of treatment, associated micro-organisms, the resistance of the patient, the type of epidemic, and the virulence of the bacillus. These factors which may influence any one case have always existed, and do not suggest any solution to the problem. Lignières considers that the toxin is at fault. The original serum made by Behring was comparatively weak in antitoxin, but Roux improved considerably on this, while Roux and Martin indicated the optimum conditions for obtaining the toxin. In 1894 Anna Williams isolated from a case of tonsillar diphtheria a strain of diphtheria bacillus known as Park-Williams No. 8, which for producing a powerful toxin has probably not been surpassed by any other strain. It is this strain of diphtheria bacillus which is used almost exclusively throughout the world for producing antitoxin, and which has been responsible for the extremely high titre sera obtained. But it is 36 years since this strain was isolated, and during that time it has been grown exclusively on artificial culture media. The question now arises whether its pathogenic power (as apart from its capacity to produce toxin) has not changed. Fatal cases of diphtheria have occurred in which antitoxin appeared to have no effect whatever, but organisms isolated from such cases have proved to be much inferior to the Park-Williams strain in their power to elaborate toxin. Owing to the supreme toxigenic power of the Park-Williams strain, it has been universally adopted, and no attempts have been made to replace it. Lignières considers this to be a grave mistake. He thinks that there is a distinct difference between pathogenicity for the human being and toxicity for the guinea-pig, and quotes similar examples with other organisms. The effect of successive cultivation on artificial media is to reduce the pathogenic power, and vaccines and sera derived from such organisms become less and less effective. The conclusion arrived at is that a recently isolated bacillus, though not so toxic as the Park-Williams strain, would produce a better serum, more powerful in its bactericidal action, and more efficacious from the therapeutic point of view. The bactericidal action of the serum must not be ignored, for observations have shown that in severe cases the bacillus invades the blood stream, and can be isolated from internal organs. The good results of immunisation by the anatoxin of Ramon are ascribed by Lignières to the fact that toxins from different types of recently isolated bacilli are used. He suggests therefore that antitoxin should be made from a mixture of recently isolated local strains of diphtheria bacilli. This antitoxin should be tested against the Park-Williams antitoxin now in use. The importance also of the bactericidal action of the serum should not be overlooked when treating severe cases of diphtheria.

This thesis of Lignières is worthy of the careful consideration of all who are concerned with the manufacture and use of diphtheria antitoxin.

[1] Bull. de l'Acad. de Med., 1930, civ., 698 and 720.

DUST DISEASES.

IN another column Prof. Lyle Cummins relates the results of an examination of the lungs of coal-miners, in which he has been engaged for some years past. These satisfy him that the anthracosis of coal-miners is a dual condition in which the retention of coal dust in the lungs is due to a state of fibrosis indistinguishable from that found in silicosis. One characteristic feature of silicosis is however absent in the case of coal-miners—namely, the increased liability to tuberculosis. In order to explain why lungs so damaged do not more readily succumb to tuberculosis, the theory is advanced that the active principle of tuberculin is absorbed by the coal dust in the lungs—an adsorption which, it is stated, carbon particles effect in vitro. Were this so it should follow that the soot-laden lungs of city dwellers would be more resistant to tubercle than those of country folk; but mortality records point to the reverse. Even though coal-miners on the whole escape tuberculosis, on some fields they experience excessive mortalities

from bronchitis which has been ascribed to the mechanical action of dust upon the larger air passages. But here also a fresh explanation has just been put forward. Prof. J. S. Haldane on Jan. 15th, before the Institution of Mining Engineers, developed the idea that liability to bronchitis depends very largely on the amount of muscular exertion which an occupation implies, and that, since coal-mining is an occupation involving much hard muscular work, it is only to be expected that the bronchitis mortality in it should be high. This idea does not account for the fact that the bronchitis rate on some coal-fields is well below normal, while that on others is far in excess. In a paper dealing with recent views on pneumonoconioses, communicated to the Epidemiological Section of the Royal Society of Medicine last week, Prof. E. L. Collis also referred to the miner; but first he pointed out that isolation of silicosis, as a specific entity with a specific cause, from the diseases caused by dust had led to close study of it and of other dust troubles. Wherever silica dust has been found as an occupational hazard, silicosis with its characteristic predisposition to tuberculosis results from it; and silica is now recognised to be a toxic industrial hazard of the first importance, however insidious its influence. Recent occupational records have shown that silicosis is not the only dust disease; bronchitis, which is usually associated with it—but may occur alone—and also pneumonia, may be equally important. Without doubt silica acts on the lungs chemically rather than mechanically; hence may arise an association between this dust hazard and diseases of the cardiovascular system, since it may induce degenerations in other tissues as well. But quite apart from such degenerations and from superadded tuberculous infection, silicosis in an advanced stage can lead to a fatal issue.

Efforts to determine a safe threshold of atmospheric dustiness are placing it at about 6 million fine particles of silica per cubic foot of air. In many industries, notably in granite cutting and in mining, the replacement of hand work by pneumatic tools has led to this threshold being greatly overstepped with disastrous results, while acute silicosis has elsewhere resulted from combining silica dust with that of sodium carbonate. Once a lung is dusted with silica the condition progresses, even though exposure ceases; but incapacity may not result until a later stage, unless some infection, usually tuberculosis, supervenes. Thereupon latent silicosis is precipitated as fibrotic nodules, while the infection runs riot. The progress of fibrosis can be detected by radiography; but other dusts than silica may originate fibrosis which throws shadows indistinguishable from silicosis. Hence radiography is not, as was hoped, a sure means for diagnosing silicosis. Experiments have shown that silica dust can reactivate quiescent pulmonary tubercle, and also make living tissues a suitable pabulum for these bacilli; thus has been demonstrated that the relation indicated clinically and pathologically between silica and the tubercle bacillus has a definite existence. Recent investigations made into the possible effects of calcium dusts, particularly those arising from Carrara marble, from Portland and Bath stones, present a sharp contrast, as they exhibit these dusts as quite innocuous. Cement dust also causes but little trouble, and that little is probably due to the presence of silicates. Coal dust again seems harmless; but most coals contain more or less minerals, capable of originating fibrosis, leading to excessive mortalities from pneumonia and bronchitis. Certain coal-miners driving roads through sandstone rocks contract pure silicosis. But all forms of pulmonary fibrosis in coal-miners lead to the blocking of coal particles in the lungs, so causing anthracosis in which the coal dust acts mechanically and may convert lung tissue into solid black blocks. The lungs of miners of iron ore exhibit on the X ray screen fine generalised mottling which is coming to be recognised as a form of fibrosis distinctive from silicosis. This form is originated particularly by the dust of silicates, and is seen most definitely among asbestos workers. Although it does not predispose to tuberculous infection, as does silicotic fibrosis, it impairs the pulmonary functions even more, and in characteristic cases of asbestosis soon causes incapacity, leading on to a fatal ending. Recognition of this specific form of fibrosis, originated by the dusts of silicates, is the outstanding feature of recent work. The extent to which the whole study of dust diseases has in recent years been advanced in this country, in South Africa, in the United States, and in Australia—i.e., by the English-speaking nations—is remarkable. More than ever is it being grasped that each dust calls for special study.

EMOTION AND BLOOD PRESSURE.

THOUGH the importance of nervous factors in the causation of arterial hypertension needs little emphasis, the extent of the variation of blood pressure under stress of excitement or emotion is not so well known. In sleep and calm surroundings the pressure usually falls, but extreme temporary increases are thought to occur during nightmares, and this is generally believed to be the explanation of most of the deaths in sleep from apoplexy. In some psychoneurotic patients there is a marked raising of the blood pressure during mental stress, and clearly arterial tension varies more widely in nervous subjects than in others. As our Berlin correspondent has reported,[1] an interesting study of reactions in "normal" people was recently carried out by R. Fischer, of Vienna. Fischer [2] used as his subjects 16 male chess-players, and examined the blood pressure during and after the severe mental effort of important chess matches. He could not, however, conclude that the actual intellectual processes of chess playing caused any appreciable temporary or permanent increase of blood pressure. Emotion, on the other hand, may undoubtedly cause a rise, and the excitement of medical examination for life insurance often leads to a definite hypertension which is a source of anxiety to medical examiners. Not only is it sometimes hard to determine how far the high blood pressure is nervous and transitory, but it must also be decided what significance the instability itself possesses. There is no doubt that subjects in whom nervous hypertension is marked are often those in whom some vascular disease already exists, and in any case it appears to indicate an arterial imbalance which may possibly develop into permanent and pathological high blood pressure. In eight cases of extreme vascular instability associated with emotional hypertension, reported by E. J. Stieglitz,[3] the rise of pressure under psychic strain was in the neighbourhood of 50 mm. Hg. This rise was accompanied by definite subjective symptoms which Stieglitz compares to those complained of by women at the climacteric. Such extreme nervous hypertension he considers a precursor of true vascular disease; it is perhaps the earliest stage

[1] THE LANCET, 1930, ii., 927.
[2] Med. Klin., 1930, xxvi., 625.
[3] Amer. Jour. Med. Sci., 1930, clxxix., 775.

of "essential high blood pressure." If this is so, an undue rise of pressure under nervous stress cannot be regarded as without significance, although the limits of the normal must be difficult to fix. Certainly high blood pressure and apoplexy are often seen among those who have led anxious lives in mental rather than physical exertion, and although we cannot yet detect completely the other factors at work, it is evident that "normal" people whose blood pressures are especially liable to rise under psychical stress should avoid as far as possible occupations involving nervous excitement. But, of course, the horse cannot always be made to drink this particular water—and who blames him?

PULMONARY ABSCESS.

An improvement in diagnostic methods is often followed by an apparent increase in the incidence of particular diseases. Before the development of chest radiograph many conditions now recognised as common were regarded as rare, and it is difficult, for example, to determine whether the statistical increase in cancer of the lungs is a real increase or not. Pulmonary abscess is another condition which cannot be diagnosed with confidence unless a skiagram is forthcoming. Radiology has shown that pulmonary suppuration, formerly regarded as an exceptional event, is relatively common. In the light of X rays the teaching of Laennec that "no organic lesion is rarer than a true collection of pus in the pulmonary tissue" can no longer be maintained. As I. Nanumuscel and N. Stoichitza point out,[1] only acute pulmonary abscesses could be diagnosed in the prerontgen era, for chronic lung abscesses were inevitably confused with other chronic inflammatory conditions, for example, tuberculosis and bronchiectasis. On the other hand, those who maintain that there has been an actual increase in pulmonary abscesses attribute it to the recent prevalence of influenzal pneumonias. A further suggestion that the Anglo-Saxon races are peculiarly subject to pulmonary suppuration as the result of tonsillectomies under general anæsthesia is perhaps worthy of consideration. An unhealthy tonsil lying in its own bed is certainly less of a danger than it is when some fraction of its substance, or some of its products, are transferred to the lower air passages. It seems unlikely, however, that pulmonary suppuration is commoner to-day than it was a generation ago. The urban dweller at least breathes a cleaner air than did his ancestor and in general is less exposed to septic infection. It is rational to presume that any apparent increase in suppurative pneumonitis is due to more precise diagnosis, and we must insist that this is due entirely to modern methods of precision, notably the application of X rays and the bronchoscope. Accurate diagnosis is the essential preliminary to sound treatment. And the accurate diagnosis of pulmonary disease is only possible when skiagrams of the best quality are available, and when these are interpreted by those who have learned to correlate clinical facts with radiological findings.

The first evidence of abscess formation on the X ray film is the appearance of a more or less localised and uniform opacity in the lung field. The right lung is more commonly affected than the left, and suppuration has a tendency to affect the middle zone in the region of the fissure between the middle and lower lobes. Disintegration of the lung tissue at the centre of the diseased area results in the formation of a cavity containing pus. At this stage a clear area above a fluid level surrounded by a clouded zone forms a picture that is pathognomonic of abscess. It is well to remember, however, that the cause of the abscess must still be determined, for a tuberculous vomica if it contains fluid or a cavity due to the breakdown of malignant tissue may simulate the results of ordinary suppuration.

Acute abscesses may resolve as the result of natural healing processes and leave only the evidence of a scar on the radiogram. Many abscesses do unquestionably heal in this way. The Rumanian writers quoted above are rightly sceptical of the claims preferred for various forms of medical treatment. Subcutaneous injections of emetine, of vaccines, or of chemicals, may be administered while the abscess is healing. The patient's morale may be supported and the physician's desire to participate in nature's therapy may be gratified in this way, but it is difficult to assess the results of medical treatment when nature's treatment is already at work. The wise physician will be careful to avoid doing anything which may hinder a natural cure. It is the chronic abscess that demands active treatment, and when it has persisted for two or more months surgical intervention should be considered, for the prognosis of chronic pulmonary suppuration is grave. It has been estimated that 60–80 per cent. of untreated chronic lung abscesses result in death within three or four years. Pulmonary suppuration will not remain localised, the condition will tend to spread and secondary bronchiectasis will bring further complications. Anaerobic organisms breeding in the closed abscess cavity may give rise to pulmonary gangrene and the patient's life becomes a burden. The victim of chronic pulmonary suppuration is indeed a pitiable object. His strength declines, his breathing is laboured, he is distressed by constant cough. Expectoration is copious and disgusting to his taste, while the fœtid breath he exhales is a source of almost intolerable nuisance to those who attend him and, though less directly, to himself. Operative risks are, therefore, justifiable, especially if there is a reasonable prospect of a complete and lasting cure. If this prospect is to be realised, operation should not be postponed for more than about two months from the onset of symptoms. It is hopeless, whatever methods are employed, to expect the healing of a lung that is sodden with pus. The choice of operation will depend upon the site of the lesion. Lobotomy, and drainage, lobectomy by the electro-cautery or thoracoplasty may be indicated, but it is necessary to realise that feeble measures will not suffice. Indeed, lesser procedures, for example the induction of an artificial pneumothorax, may prove more dangerous than far more radical operations. It should never be forgotten that the alternative to radical operation is a pitiful death from chronic suppuration.

[1] Arch. méd.-chir. de l'app. respir., 1930, v., 295.

AMINO-ACIDS IN PERNICIOUS ANÆMIA.

Hæmoglobin may be looked upon as a combination of hæmatin and globulin; hæmatin contains a tetrapyrrole group and globulin consists largely of histidine; histidine contains the iminazole nucleus. There is good evidence that the human organism is incapable of synthesising either the pyrrole or the iminazole nuclei, the total amount in the body being derived from ingested foodstuffs, and it is remarkable that the organism should be dependent on outside sources for its supply of these two organic nuclei which play so important a part in the formation of hæmoglobin. With this in view G. Fontes and

L. Thivolle [1] have recently experimented on the effect of the deprivation and the injection of these bodies in men and animals. As their source of the pyrrole nucleus they used tryptophan and for the iminazole nucleus histidine. They found that deprivation induced in rats severe anæmia and cachexia—a fact which so far as tryptophan is concerned has long been recognised. By the injection of a mixture of one part of tryptophan and two of histidine they found that they could restore health to these cachectic and anæmic animals. In human sufferers from pernicious anæmia they found that the daily injection of 100 mg. of tryptophan and 200 mg. of histidine produced a rapid rise in the blood count and improvement in the general condition; it is reported that after a month of this treatment the patients were able to carry on in a state of undiminished health and vigour for six months without further treatment. Fontes and Thivolle suggest that the curative action of liver in pernicious anæmia may be due to its containing large amounts of both of the "hæmatogenous amino-acids" in relatively simple combination, and they say that the only effective therapeutic liver extracts contain these two amino-acids in high concentration. Pernicious anæmia they attribute to a failure of the alimentary system to carry the digestion of proteins to the stage at which the "hæmatogenous amino-acids" are made available for assimilation. In support of this view they point to the achlorhydria and the digestive disturbances universally met with in this disease.

INTRAPERITONEAL THERAPY IN CHILDREN.

THE administration of fluid and drugs to young children when they are ill often presents great difficulties, which can sometimes be overcome by using the intraperitoneal route. G. C. Grulee and H. N. Sanford [2] have no doubt that fluid and drugs so given are absorbed, though the exact mechanism of absorption is obscure. They have used intraperitoneal injection to supply glucose solution in infantile diarrhœa with dehydration, in pneumonia, in pyelitis, and in post-operative illness, and they have also used it for blood transfusion, and for giving neo-arsphenamine in congenital syphilis, antitoxin in diphtheria, and colloidal iron in secondary anæmia. The possible dangers are infection of the peritoneum, pressure on the diaphragm by injection of too much fluid, and occasional severe reactions from irritation by the substances injected. We may perhaps add injury to an important organ, but this risk is not as serious as might be supposed.[3] The disadvantage is that with some substances, such as blood, absorption may be slow, though usually it is very rapid. The advantages, on the other hand, are great: oral, rectal, and subcutaneous administration of fluid in young children is often unsatisfactory and much larger quantities can be taken via the peritoneal cavity—e.g., 100 c.cm. of 5 per cent. glucose solution may be given at one injection and frequently repeated. In severe anæmia it is claimed that frequent small intraperitoneal injections of blood are easier to give and cause less severe reaction than repeated intravenous blood transfusion. H. Florey and L. J. Witts,[4] it may be recalled, came to the conclusion that in emergencies abdominal transfusion of blood is not so valuable as intravenous injection and thought it should be reserved for the more chronic forms of anæmia. Although some critics may feel that asepsis of the peritoneum is too sacred a thing to tamper with in ordinary circumstances, there are undoubtedly times when the giving of an adequate amount of fluid is a matter of life or death, and in such cases at any rate the possibilities of the intraperitoneal route should be remembered.

[1] Bull. de l'Acad. de Méd., 1930, civ., 730.
[2] Arch. Dis. in Childhood, December, 1930, p. 371.
[3] See THE LANCET, 1926, i., 772.
[4] Ibid., 1928, i., 1323.

GRANTS FOR RESEARCH.

THE trustees of the Ella Sachs Plotz Foundation are anxious to make known the resources of their fund, whose general object is the advancement of scientific investigation. The Foundation seldom or never offers stipends to investigators, nor does it provide apparatus and materials which are ordinarily part of laboratory equipment. Its special purpose is to give grants for the purchase of apparatus and supplies needed for special investigations and for the payment of unusual expenses incidental thereto, including technical assistance. At present research is favoured which bears on medicine or surgery, and the trustees endeavour to assist workers in various countries who are trying to solve identical or related problems. Thus a considerable number of grants have been made in the last few years for studies on nephritis, while internal secretion and infection have also been specially favoured. In the seven years of its existence the Foundation has made 120 grants and investigators have been aided in 15 countries. The sums provided last year for 25 different workers ranged from 200 to 500 dollars each.

Applications for assistance during the coming year should arrive before May 1st, including statements about the nature of the research, the amount of money wanted, and the objects on which it will be spent. The secretary of the executive is Dr. Joseph C. Aub, Corliss P. Huntington Memorial Hospital, Boston, Mass, U.S.A.

RUSSIAN SCIENTISTS AT HOME.

THE Society for Cultural Relations with Soviet Russia is considering the possibility of organising a scientists' tour of scientific institutions in Soviet Russia during July and August of this year. It is proposed to arrange for parties of British workers engaged in physical, biological, and medical research to visit and meet Russians engaged in similar investigation. "Voks," the central institution in Moscow for organising cultural relations with foreign countries, is prepared to give every assistance to the tour, and "Intourist," the Soviet organisation for tourist parties, will consider giving specially reduced travelling charges. All those prepared to join such a tour are invited to write to the secretary of the society at 1, Montague-street, London, W.C.1.

We regret to announce the death, on Jan. 27th, after a prolonged illness, of Dr. Archibald Leitch, Professor of Experimental Pathology in the University of London, and Director of the Cancer Research Department of the Cancer Hospital, Fulham-road. Prof. Leitch, who was in his fifty-third year, had recently devoted much of his time to the successful development of various methods of experimental carcinogenesis. He was an enthusiastic supporter of the British Empire Cancer Campaign and took a prominent part in the organisation of the valuable Conference held under its auspices in 1928.

A POST-GRADUATE COURSE

MOTIVES AND MECHANISMS OF THE MIND.*

V.—INDIVIDUAL EMOTIONAL DEVELOPMENT.

LANTERN SLIDES.

IT is desirable at this stage to get as clear an idea as possible as to the scope of psycho-pathology. Does it propose to reduce all experience, behaviour, and personality to "only" mechanisms and unconscious motives? Does it apply to everyone, sick or well, normal or abnormal, or only to those mental aberrations which are termed psycho-neuroses and psychoses?

Let us imagine for a moment that we are working a magic lantern, which has thrown on to the screen a blurred and confused image that is unintelligible both to us and to the audience. "What does this confused picture mean?" we ask. Parts of it seem to be plain, but not obviously connected with each other, and the whole is blurred, as if several slides are projected on to the screen at the same time, overlapping one another. Perhaps someone comes to our assistance, pulls a slide out of the magic lantern, and holding it up to the light says, "Look, it is quite simple. This is a straightforward picture of an Inferiority Complex." And so perhaps it is. But then another helpful person comes forward, and taking out another slide says, "This is obviously an Œdipus Complex, and those things are only phallic symbols." Then there are others, who each discover different slides. One says, "The man is a thinking introvert, and that accounts for everything." Another says, "Recapitulation mechanism." Another, "The man is hyperthyroid with an over active sympathetic system." Another, "He is toxic: look at his teeth." But each is liable to see only the one slide which he is examining, whereas the truth was in fact just that confused picture which was on the screen, showing the sum of many factors, which was the man's life as a whole. Each slide was in fact included in that whole, but it was not the only one.

Let us try to generalise about these "slides," and classify them a little, to show of what factors each individual life is composed. In other words, we can sort out the confused picture which each individual life presents by analysis of its component motives and experiences.

The first "slide" which we must look for is *individual experience*, the particular factors of environment which have influenced development in each particular case. Remembering the importance of "transferred affects," we can analyse back from the value of "this, now" to the cause in an experience of "that, then." This slide seems to be complete in itself, developed in continuity and by association, but it is not all of a person's life and character, and leaves much still to be understood.

The second slide is *recapitulation*, and is something quite separate and distinct from the first. It does not refer to individual experience, but to the expression of inborn racial factors, which seem to be quite independent of experience, and conform to general types. Both what we fear and whom we love are influenced by recapitulation, as well as by experience. Recapitulation therefore makes our understanding of life infinitely more complex, because it introduces deeper factors independent of personal experience.

The third slide which we may expect to find is that of *type*, which is a matter of great importance in individual variation. The best classification of types is that of Jung, who divides people into (*a*) extraverts, (*b*) introverts, each again divided into (1) thinking, (2) feeling, (3) intuitive, (4) sensorial as subjunctions. This is in itself a very large subject, and readers who are interested in pursuing it further are referred to Jung's "Psychological Types."

The fourth slide is due to *physical factors*, such as endocrine variations (e.g., thyroid, pituitary, gonad and adrenal excess and deficiency) or toxæmia from any source.

So far our analysis may be mathematically logical and determined. We may examine each slide separately, and say, "This is only a form of that, and has been produced in such a way, having been irrevocably determined and caused by so and so." Much analysis seeks to be of this mechanical and final kind: but is it then complete in its understanding of the individual, his character and behaviour? Or is there yet another slide, an original unique individual potentiality, distinct for each one of us, and not able to be analysed or defined any further? It may be regarded as being a difference of quantity or of quality, but we must allow for its existence, and accept it as the basis of our technique and the limit of our therapeutic success. Analysis cannot change fundamentals, or make "Silk purses out of sows' ears." It can only make the best use of the potentialities of each individual's innate endowment, and with that limitation it must be satisfied. We may call this last slide a *unique individual integrative and dynamic factor*.

Finally, we see that these five "slides" may be applied to everyone, well or sick, normal or abnormal, sane or insane, psychoneurotic or psychotic. But it is obvious that psychopathology will occur to a more marked degree in the sick, the abnormal, and the insane. The difference, however, is only a matter of degree, and we may expect to find our knowledge and understanding of our patients greatly increased and simplified by our knowledge of ourselves, our motives, and our behaviour.

Undifferentiated Ego.

We must now go back to the beginning of the individual life and enter, so far as we are able, into the world of the infant. A good deal of stress has been laid in some psychological quarters upon the baby's first experience, that of birth. There can be very little doubt that the more or less sudden change, from a life of complete tranquillity within the womb to the very different outside world, must come as a rude shock, towards which the first cry is an appropriate expression of feeling. As soon as this is over and the baby safely bestowed between the warm blankets of its cot, it has become more nearly restored to the earlier state of peace and tranquillity, except, however, for the urge of hunger. Warmth may be provided by the blankets, but the satisfaction of hunger requires food in quite a new way from that to which the baby has in the past been accustomed.

Before birth the state of the baby must nearly approach Nirvana in its feelings of bliss, peace, and

* A course of 12 lectures delivered under the auspices of the Tavistock Clinic, Tavistock-square, by Dr. E. Graham Howe during the autumn session of 1930. Earlier lectures of the series have appeared weekly in THE LANCET since Jan. 3rd.

omnipotence. Every need is supplied without effort, and the fœtus is protected from every external shock and danger. With birth comes a rude awakening, and the baby realises its first sense of *deprivation*. Food can now only be obtained at intervals and with a considerable degree of effort. Certain functions are expected of it and it is surrounded by unaccustomed stimuli. Every detail of life is a new experience and the constant struggle with environment, which must continue until death, has begun.

If we are to put in words the state of satisfaction which the fœtus must feel in intra-uterine life, we do so as a comparison with the changed state which must follow upon birth. Within the uterus the fœtus possesses a "limited omnipotence"—i.e., the immediate satisfaction of desire and a complete sense of safety. When it is born, the omnipotence has departed, familiarity and safety give place to novelty and fear, and the satisfaction of desire has to be postponed to suit the convenience of others. Development has taken place by deprivation and this earliest lesson of gaining by losing is only the first of many more which are to follow. The sense of *deprivation* gives rise to feelings of *resentment* and *rebellion*, and would seem to account for all the behaviour disorders of earliest infancy. The infant does not give up its prerogative of omnipotence without a struggle.

In the beginning, the world of the infant is only a large undifferentiated "me." There is no distinction between "me" and "not me." This is termed the condition of the "undifferentiated ego." Differentiation takes place through a gradual realisation of deprivation and a progressive distinction between what is "me" and what is "not me." In the beginning there is no difference between "my mother" and "me." She exists only as a source of gratification of my feeling of hunger, and her nipple is as much part of "me" as the mouth which receives it. The lesson of deprivation is an early one and gradual distinction is made until awareness of the limits of one's own ego is finally acquired. For the rest of our lives, however, we may be said to be struggling against our limitations, struggling as it were to fulfil our infantile conception of undifferentiated ego and effortless omnipotence. We rarely entirely give up the illusion of this extended possessiveness, and our passion for property and power in later life is often only a recrudescence of this infantile longing.

Let us try to trace the sequence of this development from the beginning to the end.

1. In the beginning is "me." *I feel* and *I wish*.
2. Then comes differentiation between "me" and "not me." "I feel *it* is not *me*." This is accompanied by a sense of deprivation.
3. Experience of what is "not me" leads me to know what I feel about it (the *sense* of it).
4. I can then learn to know what "it" is, distinct from what I feel about it, and as having its own independent existence apart from me.
5. I make use of what is "not me" where I can to fulfil and satisfy "me." I can thus eventually get over my initial sense of deprivation.

GROWTH.

We must now define what we mean by psychological *growth*. It is the process of emotional development, which on the one hand occurs according to the pattern of recapitulation, and on the other results from interaction between individuality and experience. It is partly a consequence of the development of an inborn pattern due to past racial experience according to the law of recapitulation. It is partly a consequence of the individual's experience of interaction between himself and his environment. It begins with a differentiation between "me" and "not me," and proceeds by continuity and association, selection and integration, to the completeness of individual character. The dynamism of growth operates from within outwards, according to certain instinctive urges and through associated emotional states. Growth is a progressive distinction between "me" and "not me," in which the focus of interest is in the first place ego-centric and finally cosmo-centric. Self-expression and wish-fulfilment are achieved through manipulation to our ends of an external reality, which is viewed as something objective and independent of ourselves.

Failure in the development of individual character may be due to two distinct causes:

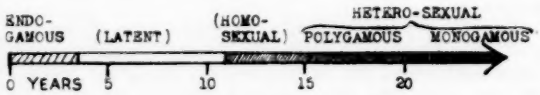
1. *Defective material* may cause an inborn weakness of individual constitution.

2. *Environmental factors* may thwart and overcome innate tendencies and potentialities. In either case it will be seen that the defect is due to a failure of individual growth to overcome the resistance of the external environment. The struggle between the two is a relative one, in that the lesser individual constitutional strength will only be able to cope with a less difficult environment, whereas the stronger constitution can succeed in the face of greater difficulties. It may be said that some character defects are born, but others are made by environmental influences. As Freud has said, some patients would have been ill in any case, but others under easier circumstances might have remained well.

Recapitulation Scale.

It is now necessary to correlate individual development, through experience and association, with what was said in the previous lecture about recapitulation. Individual emotional development and recapitulation take place, as it were, one overlaid upon the other, recapitulation being the underlying principle which is all the while being modified by experience.

FIG. 1.



In the above diagram† the earliest phase of emotional development, 1–3 years, is correlated with recapitulation of the endogamous racial phase. The homosexual phase, from 10–15, is probably not associated with recapitulation, but may be due to a cause which will be mentioned later. From 15–20, we enter the heterosexual polygamous phase which passes eventually into the heterosexual monogamous phase, which probably represents the highest level of sexual adaptation, both for the race and the individual.

Emotional Development.

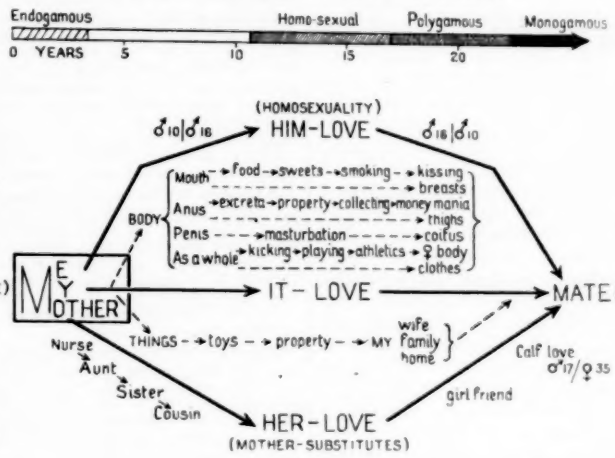
In the following scheme it is proposed to limit our consideration to the male for the sake of simplicity. In a subsequent lecture some attempt will be made to

† A word of warning is necessary about these diagrams. They are only of use in such a subject as this if their value is very strictly limited. They are not intended to be actually representative of what occurs, but only to suggest a scheme to simplify our understanding. Any diagrams in these lectures are therefore put forward tentatively as the nucleus of a framework upon which to hang ideas, and too much must not be expected of them.

distinguish between the differences of development and general psychology of the sexes. To a large extent the principles will be found to hold good for both sexes, although they sometimes appear to be considerably more clearly shown in the male than in the female.

Let us be quite clear again as to the starting-point of emotional development. Essentially it is a state in which "I love myself," and "myself" is in the condition of undifferentiated ego. The infant's interest in life is determined by what he can get out of it without putting anything into it. He is entirely ego-centric, self-willed, self-loving and self-centred, competitive rather than coöperative, possessive and keenly resentful of dispossession. At the other end of the emotional scale, which may be described as "emotional maturity," the opposite is found to be the case. Instead of self-love we have a state of object-love; instead of being self-centred we are object- or cosmo-centred. Altruism has taken the place of self-will and self-love, and a coöperative attitude that of the competitive. A completeness of differentiation has taken place between "me" and "not me" in which the possessive, competitive attitude is replaced by the sharing, coöperative one. All this takes place through normal development and growth.

FIG. 2.—*Emotional Development (Male).*



By what process of development and through what stages is this change achieved? In its simplest form, the continuity of the process is suggested in the accompanying diagram (Fig. 2). The initial state of undifferentiated ego is represented by the three characteristics of "me," "my" and "mother," at this stage only potentially distinct. This is the primary goal of the earliest love feeling, and is *self-love*. At the other end of the emotional scale is the *potential mate*, the goal of sexual object-love. The purpose of the diagram is to show the continuity of development between infantile self-love on the one hand, which is competitive and possessive, and mature sexual object-love upon the other hand, which is altruistic and coöperative. Both of these must, of course, be regarded as theoretical abstractions subject in practice to individual modification.

As we proceed from left to right of the diagram, development roughly corresponds with the recapitulation time scale which is placed above it. The principles of *continuity* and *association* must be preserved and in order to get from A to Z we have to proceed through intermediate phases represented by the other letters of the alphabet. In the beginning we have a state of "me love," in the end a state of "mate love." What are the intermediate steps? The intermediate source of emotional interest would be partly "me love," partly "object-love"—someone who is like me but not me, yet someone who is also like the mate but not the mate. This condition is fulfilled by what is called on the diagram "him love," reached in the adolescent phase of homosexuality, say between 10 and 15. "He" is like "me" being of my sex, but he is not me. In the early phase of homosexuality the emotional interest is usually of a younger boy for an older one, say of a boy of 10 for a boy of 16. In the later phase, however, the condition is usually reversed, the boy of 16 tending to be more attracted to the younger boy and the emotional position then corresponds more nearly to what will ultimately become mate love. The younger boy is more nearly in the feminine rôle of dependence. It is characteristic of the homosexual phase of early adolescence that normally boys should only be interested in each other, and have very little use emotionally for the opposite sex.

"HIM LOVE": HOMOSEXUALITY.

What do we mean by homosexuality? First of all, it is a normal phase associated with adolescent development and is not therefore necessarily to be regarded as a perversion. Secondly, the normal phase of homosexuality is independent of any overt sexual expression. This, when it occurs, may be regarded as a pathological expression of a physical sexual factor, but seeing that the normal phase of homosexuality occurs at the same time as the sexual glands are developing, it is not surprising that some overt practice of homosexuality does often take place amongst boys, the most common being, as would be expected, the practice of mutual masturbation, with more or less pronounced differentiation of masculine and feminine rôles.

The following classification of homosexuality may be suggested:—

1. Physiological.
2. Psychological.
   - (*a*) Normal phase
   - (*b*) Fixated—
     - (1) Sublimated.
     - (2) Overt.
     - (3) Repressed.

In *physiological* homosexuality, the bisexuality which is physiologically present in all men and women to a greater or less degree usually shows some evidence of those characteristics which are associated with the opposite sex. In the more obvious cases of male physiological homosexuality the physique and behaviour is strongly suggestive of the feminine type, with a tendency towards prettiness, passivity, and timidity. Physiological homosexuality is an individual predisposition and is very rarely amenable to successful psychological treatment.

Psychological homosexuality is the more frequent of the two. In these cases the feminine characteristics are usually lacking, but the choice of object-love remains towards a member of the same sex. Such cases offer a far greater hope of satisfactory treatment.

Psychological homosexuality may be divided into two phases: (*a*) normal phase, (*b*) fixated. The

normal phase of psychological homosexuality occurs in adolescence about the years 12–15. It is very common, however, in the absence of opportunity for heterosexual self-expression, for the homosexual phase to persist beyond adolescence up to 20 and sometimes 25 or even later. Young men of this age are often aware of the attractiveness of boys of their own sex, while being at the same time also susceptible to feminine attractions. It is as if the usually brief homosexual phase persists in the absence of complete heterosexual opportunity for development. Such men when they marry usually become fully and normally heterosexual without any difficulty. Sometimes heterosexual development does not take place, however, and the condition is then referred to as *fixated*, and is liable to show itself as what is known as *perversion*. The possible causes of such a fixation will be referred to later.

Homosexuality may occur in any of three ways. It may be: (1) sublimated, (2) overt, (3) repressed.

Sublimated homosexuality is a normal and desirable emotional activity of adolescence, and occurs without any overt sexual expression. The tendency of boys to seek only each other's company, to associate in clubs, packs and gangs, and to be completely intolerant of and indifferent to the female sex, is the normal expression of this phase. Sublimated psychological homosexuality is the attitude of the normal schoolboy. After heterosexual development has taken place, sublimated homosexuality remains of great importance as being the tie which binds men in friendship, and through which they enjoy each other's company in clubs, masonic gatherings, and the everyday intercourse of business and social life. The homosexual impulse is therefore of great importance in regulating and inspiring social behaviour.

Overt homosexuality finds active self-expression with a member of the same sex sometimes by the practice of mutual masturbation, often by the more sexually differentiated form of intercrural intercourse. When it occurs this may be regarded as a perversion, but in the absence of the teaching of the elements of sexual hygiene and development it is not really to be wondered at, and need not be considered seriously pathological, although it is certainly morally and psychologically undesirable. The comparatively very rare perversion of intercourse *per anum* is a sign of fixation at the earlier anal-erotic level, which will be referred to later, and is a far more serious though much less frequent problem.

Repressed homosexuality is a matter of great importance because of the unconscious influence which it brings to bear on the subject's attitude towards others who possess a similar tendency. It is only natural to expect that the choice of the scholastic profession is largely determined by a man's degree of emotional interest in boys. It is therefore also to be expected that there should be an increased degree of homosexuality amongst schoolmasters, but without any opportunity for its overt expression. It must be repressed, and this causes certain consequences. It can only be repressed by the individual regarding it as a very serious misdemeanour in himself and therefore in others. Intolerance of homosexuality is a defensive mechanism required to preserve its repression and the observance of moral standards. Schoolmasters as a whole, therefore, are very liable to be unwisely intolerant of masturbation and homosexual practices, and are inclined to regard them with undue severity when they are discovered amongst their boys. Their attitude is inclined to be drastic and punitive and the punishment unwarrantably severe.

Repressed homosexuality presents a problem which it is difficult for the moralists to answer. There may be no outward expression of homosexuality at all. On the contrary, the individual's life may be lived according to the highest moral standards, but it may still persist. A great many marriages are wrecked owing to the fact that one partner is a repressed homosexual and therefore sexually intolerant of the other. Heterosexual union may take place with the subsequent birth of children and yet repressed homosexuality may persist, of which the following is an illustrative case.

CASE O.—Married. Aged 52. Three children. Occupation: master tailor.

Symptoms: Excessive anxiety, intense feeling of guilt and delusions of persecution (paranoia).

History: The symptoms had developed about two years previously in the following circumstances. The patient had been discussing with his friends a case at the Old Bailey of homosexual practice, but he found that he could not get the case out of his mind. He thought people were accusing him of homosexual practices, and, although he had never been guilty of them, he felt an extreme sense of guilt. He imagined that people who passed him in the street were making accusing remarks about him, and this state of affairs caused him intense anxiety.

As a boy he was entirely innocent and ignorant of sexual matters. He was apprenticed to tailoring and his combination of skill as a cutter, with his social aptitude, made his business a great success. People used to go to him as much for his friendship as for the quality and cut of his suits. It may be imagined that his contact with those of his own sex, measuring and fitting, &c., gave him considerable outlet for homosexuality, although it was to him entirely unconscious.

When he married he was quite ignorant of sexual matters and he chose a very timid and invalid wife, by whom he had three children. He was a very enthusiastic social worker in connexion with the church, in which he held at various times all the responsible positions open to a layman. He was very rarely at home in the evenings but always sought the company of his friends.

Analytical investigation proved the existence of his homosexual impulse, which had never been conscious or overtly expressed. Its existence seemed, however, to have determined the subsequent insanity from which he did not recover. His sense of guilt applied not to what he had done, but to what he unconsciously wished to do, and the repression of his homosexuality ultimately came out through the mechanism of his delusions.

"HER LOVE."

The lowest line of the diagram (p. 259) is that which proceeds from the beginning "I love my mother," to the end "I love my mate." Again it is necessary to preserve continuity and association. "She" must be someone who is like my mother but not my mother, like my mate but not my mate. This line preserves the heterosexual continuity and is the line of "her love," the loved object being more or less a *mother substitute*. The transference of emotional regard shifts in turn to various associated mother figures, the first probably being the nurse. The strength and weakness of the position of the aunt in the family lies in her near association to the mother. At a later phase, the cousin is of importance as being the last emotional link with the family. She is still in the family, but is so nearly outside it as to become very near the potential mate. What is known as "calf love" occurs when a boy of 16 or 17 finds his most loved object in a woman of mature years, 35 to 45. The cause of this lies in the fact that her age and maturity remind him of the origin of his love feelings, his mother. In the final adjustment of the man to the mate, there is usually not a little of this "mother-love," but it can easily be too much for matrimonial harmony. "All husbands need to be treated like children sometimes." But a true mating involves a loosening of many bonds, of

which the most important is complete unbinding of the maternal apron strings. If all parties in matrimonial experience realised this simple fact of human psychology, many marriages would be happier than they are.

"IT LOVE": PROPERTY FIXATION.

The third potential division of undifferentiated ego comes from "my" love. This may be divided into two: *my body* and *my things*. The part of the body which is of primary emotional significance is *the mouth*, by its association with the maternal breasts and the infantile food-supply. Sucking is therefore an activity of great importance, from which is derived a large amount of emotional gratification. Through what line does this continue and through what associations is it maintained? We find an intense interest during the whole of life in food, exaggerated in some cases such as the glutton, the gourmand and the gourmet, in all of whom the importance of food as a means of gratification is more than it should be. Eating sweets comes into this line of continuity and association, and is particularly an activity of childhood and adolescence. After adolescence the sweet-sucking tendency gives place to that of cigarette and pipe-smoking, which is probably an extension from the primary sucking gratification. A more definitely sexual derivative of this oral source of gratification (known technically as "oral erotism") is kissing, which is of ultimate significance with regard to the mate.

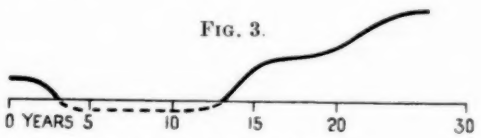
The next part of the body which assumes importance as a source of gratification is that which is associated with the alimentary excretory function—i.e., *the anus*. The degree of interest which the infant takes in its excretory function is rather surprising, but it is quite definite. Perhaps this interest has become exaggerated owing to the importance attached to it by mother and nurse from the beginning. It is rather strange to realise the extent to which the excretory function is associated from the beginning with the moral concepts of good and evil. A child is "good" whose bowels function regularly at the behest of mother or nurse, and the child is "bad" who fails to do so. From the first day the child is born, the ordered exercise of this function is expected, and for the most impressive years of life it is associated with the moral qualities of good and bad. Besides the moral aspect there is also a more physical aspect of "well" and "ill," and it is perhaps for this reason that alimentary function may develop an exaggerated importance even in general medicine. If our bowels have not been opened we feel "bad" or "ill," and probably a large part of this feeling has been built up by association and continuity from the values inculcated in us from infancy and childhood. The alimentary function is important, but not to the degree which we unconsciously ascribe to it. To some it assumes an exaggerated importance and the tendency to rebellious independence may show itself in the development of intractable constipation, which is therefore in such cases of psychological and not physiological causation.

It has been suggested that another derivative by association of this "anal-erotic" interest is the habit of collecting, best exemplified in the case of the miser. In this case money has become the symbol of a primary anal-erotic interest in fæces. It is also suggested that all collecting manias originate from this source, although they may be as varied in object and degree as the obsession of the miser, or the highly sublimated interest of the collector of objects of art.

A more definite derivative in simple continuity is the erotic gratification derived from the thighs, corresponding to the oral gratification derived from the breasts, of the loved one.

Early in the second year the *penis* is an object of possessive interest and pride, and it is also sometimes a source of gratification by masturbation in infancy and early childhood. It is again associated in the first place with its excretory function, and children often take great interest in urination. It is not, however, until puberty that it becomes of dominant importance, with the physiological development of the gonads. It is the greatest possible mistake, however, to think that sexual development commences at puberty. *The sexual function of puberty is only a continuation of all antecedent sexual function*, which has begun not only in the individual lifetime, but also in a far-distant racial past.

FIG. 3.



Development of sexual function.

The above diagram shows the way in which sexual function and interest tend to be latent from the period of about 3 to puberty, but the sexual feelings of puberty are all derived from earlier infantile sources.

MASTURBATION.

The first thing to recognise in consideration of *masturbation* is, *in the absence of adequate sexual instruction*, its logical inevitability. Nature has been unduly prolific in its endowment of the human race with the sexual procreative urge, and it is in adolescence, with the development of the sexual glands, that we must expect a sudden development of sexual interest and activity. It is possible to keep children ignorant, but not "innocent." The sexual factor is an inborn urge of great intensity and, when associated with a healthy curiosity and the normally developing phase of homosexuality, it is not surprising that masturbation should occur in males at some period of their lives. It is, of course, impossible to give accurate figures, but authorities put its frequency at over 95 per cent.

If masturbation is so logical and inevitable, why is it always accompanied by such an intense feeling of *guilt*? Even where it is practised without apparent self-restraint, there is always an underlying guilt sense, and it is owing to this that the practice of masturbation is *psychologically* injurious. In spite of much that has been said to the contrary, it is not *physically* injurious unless practised to excess. It is difficult to define "excess," as this must of course involve an individual factor, but it frequently occurs daily over long periods without giving rise to physical injury, although on the psychological side there is always a loss of self-respect and strength of character. It is quite impossible to be so frequently overcome by impulses to do what one feels to be wrong, without suffering in strength and coördination of character. But in spite of this it is quite untrue to say that masturbation causes insanity. It is primarily a symptom, not a cause, although it may secondarily become a cause of various degrees of anxiety.

The guilt of masturbation is due to a "transferred affect" from which all our sexual feelings are after-

wards inclined to suffer. The origin of these sexual feelings, being associated with the mother, takes its guilt from that source and the guilt of masturbation is a transferred affect from the primary incest motive. It is common for patients, and sometimes boys also, to feel that they have committed the "unpardonable sin," and this association of extreme guilt is derived from the incest motive. In a later lecture it will be suggested that the Holy Ghost is a derivative of the mother figure, and the "sin against the Holy Ghost" is therefore an unconscious link with the primary love for the mother.

We can now understand why the idea of *punishment* is so frequently associated with the guilt sense of masturbation. Well-meaning pamphlets written by ignorant propagandists stress the terrible consequences of the practice of masturbation, which they say causes physical diseases and insanity. Unfortunately it might be said with some truth that these well-meaning pamphlets have done more harm, both physically and mentally, than ever the practice of masturbation has done, by exaggerating fears of punishment which are already present in the individual; unconscious feelings. The unconscious pattern is to connect guilt with punishment and it needs no pamphlet to help us to do so. These pamphlets are only a defensive "projection" from the writer's own feelings of guilt, and they do nothing towards the elucidation of what must always be a difficult problem. There is no doubt that feelings of guilt and fear are inborn tendencies capable of causing great harm, which require to be eliminated, not exaggerated. Exaggerating guilt and fear, however well-meaning, is always harmful and prejudicial to normal development.

THE BODY AS A WHOLE.

There is a very real gratification to the infant in the exercise of his limbs. Happiness is to lie naked with every movement of arms and legs free and unfettered. This satisfaction of free movement is the source from which is afterwards derived much of the pleasure of athletics. Running about on a football field is in continuity with the untiring activity of the child who never wishes to keep still.

The *body as a whole* is a source of pleasure, especially in a state of nakedness. "Exhibitionism," as it is called, is frequently found in small children, who may suddenly be discovered with no clothes on at all enjoying themselves intensely. In early childhood it should not be taken too seriously, because repression of it is liable to give rise to those cases of impulsive exhibitionistic self-exposure, which may occur as a perversion in later life.

The affect may be transferred from the body to the clothes, and the "dandy" is a person whose exhibitionistic self-love has become at least partly transferred to his sartorial elegance. The ultimate conclusion of this line of love interest is fulfilled through the delight in the clothing and body of the beloved.

"PROPERTY FIXATION."

The second division of "my love" is derived from those things which are mine, apart from my body. In the first place these are "my toys," about which the child is inclined, in the beginning, to be exclusive. A great sense of power and personality becomes associated with property however insignificant the property may seem to be. The contents of a boy's pocket, to the superior adult, may seem to be trivial, but the collection of string, stamps, foreign coins, clasp knife, and other "rubbish" represent to him symbols of the utmost significance which are in no way to be treated lightly.

Our sense of personal valuation, which it is very often hard to achieve owing to adult superiority, is easily extended by our possessions, and their quality and quantity may come to be taken as a measure, quite wrongly, of our personal prestige. The person who is so proud of his wireless set is often using it as a means of extending his own personal value. It is not merely a wireless set, it is a part or expression of himself. "It is perfect, it is mine, it is me." Pride of possession in a new car is also to a large extent the expansion of the owner's ego. "It is my car, it is me. It is a very fine car, therefore I am very fine." The person who requires to raise his prestige through the possession of a two-seater coupé Rolls-Royce is probably in need of a great deal of over-compensation for his feeling of inferiority. These are all examples of "undifferentiated ego" and of failure to distinguish between what is "me" and what is "not me."

A certain type of early-Victorian parent was an example of this attitude of property fixation and undifferentiated ego. He adopted the patriarchal attitude of possession of his tribe and permitted very little individuality to its members. His wife decorously submitted; his sons were appointed to their respective professions of the Church, army, or navy; and the daughters were so many elegant appendages to the family tree. "Property fixation" is always possessive and exclusive, denying the individual rights and freedom of others. It is interesting to surmise that this has perhaps been partly the cause of the development of the present commercial system, which would suggest that the state of our economic development has also not progressed much beyond an early emotional level.

The parent of mature emotional development values himself for what he is and each individual member of his family for what they are, independent of himself. He is not patriarchal, dogmatic, or possessive, and is not intolerant of the divergent views of different sexes at different ages.

Narcissism.

It is interesting and useful to give a more definite psychological meaning to the three words—pride, conceit, and vanity. We are *proud* of a heritage which we have not made ourselves—e.g., our school, our family, our country. There is no undifferentiated ego in pride. It is impersonal. We are proud of our bodies, our physique, and our health, but we are not "self-made men." Pride is a consequence of ego differentiation and is therefore entirely free from vanity or conceit. It is the only one of these three words, which, used in this sense, represents an unqualified virtue. True pride is always humble because it is impersonal, and it seeks to gain no personal value out of the object of its pride.

Conceit is associated with shyness and is an over-compensation for a feeling of inferiority. The conceited person takes every object of undifferentiated ego that he can to add to the stature of his prestige. He needs it all, because of his fundamental lack of self-respect. It is not abuse or even criticism that he requires, so much as some measure of real achievement which will add to his self-respect. Conceit and shyness are the twin horns of the dilemma of the inferiority complex and are always signs of an undeveloped and unstable emotional synthesis.

Vanity is the everyday word used for the more

psychological one of "Narcissism." It is different from both pride and conceit. It is personal self-love without that feeling of inferiority and its over-compensation, which is characteristic of conceit. The vain person loves himself without criticism, admiring himself in every reflection which he sees and expecting to be admired in the same measure by others. Narcissism is an unqualified expression of self-love and the vain person has not developed far on the emotional scale. He is the god of his own idolatry.

Sex: Its Source and its Derivatives.

Those who wish to criticise modern psychology usually find cause to do so in what they call its sole preoccupation with sex. From what has already been said it is obvious that the general attitude towards sex must be to some extent uneducated and unconsciously based upon motives of guilt and fear. Any true valuation of sex must be independent of unconscious sources of guilt and fear, and will therefore arouse a great measure of unenlightened criticism from those more subject to unconscious motives. On the other hand, a part of the criticism is probably true. Psychology is still somewhat new and unbalanced and it is probable that the sexual factor, neglected for so long, has now received undue importance which time will tend to correct.

Our great difficulty in getting a true estimate of what we mean by "love" is that our use of the word covers such a large range of experience. On the one hand there is the religious conception of love, on the other the sexual, and for the two we use the same short word. Even in sexual love there are the extreme limits of Narcissism and mature mate-love. We can only begin to see the problem in its true perspective when we realise that it is one of growth, the beginning of which shows very wide variation from the end. It is as if both the acorn and the oak tree were described by the same word, in spite of their obvious disparity.

The infantile undifferentiated ego is only interested in self-love, and like the acorn, represents the beginning from which growth develops. Altruistic object-love, with all its extensions and associations in relation to sex, represents the mature development of the oak tree. Sex is only one aspect of emotional development, but it is the source from which arise by continuity and association our feelings for all the people and objects we love. Sex is a limited focus of love and the sex activity is a limited development of the love-life, which is capable of expression in innumerable other forms. The function of sex is the all-important one of reproduction and the continuity of the species, but it would also seem to be only the procreative aspect of a greater theme. The greater theme is the urge for development, growth, progress. Love is the builder, not only of individuals and families, but of races, causes, and of all creative and artistic effort. When we get our perspective of sexual life in some degree of order we can see the beginning, but we cannot see the whole because the ultimate potential development is so far beyond. Sex is not all of love, but it is the beginning, and in order to understand the end it is necessary to know something of the beginning also.

Our view of life generally suffers from being unduly anthropomorphic. Love is not necessarily the tender emotion of our sentimental fancy, as its beginning in intolerant and competitive self-love proves. "Nature red in tooth and claw" is an example of an early phase of self-love, competitive, exclusive, and self-centred, but nevertheless as a beginning it is in ultimate continuity with the highest level of self-development. Love is the force which both preserves and develops the individual, and at the same time defines his attitude towards others. Love is the urge towards all coöperation, synthesis, and growth, and is not in itself necessarily a human characteristic. What we see of love in human life is only its human aspect and what we see of love in sex is only the sexual part of its human aspect. The essential principle of love would seem to be independent of sex, independent even of the human race. Is it not the force, the primal urge, of all that grows and is creative in life?

APPEALS BY VOLUNTARY HOSPITALS.

IN THE LANCET of Dec. 27th, 1930 (p. 1425), appeared a tabulated list of voluntary hospitals making special appeals. The list was known to be incomplete, and it was stated that a further list would be published if notice was received from other hospitals appealing for funds for some special purpose. The following hospitals have asked to be included in this list.

The list shows that apart from appeals for maintenance, the voluntary hospitals throughout the country are in need of well over three million pounds for developments, extensions, and, in some cases, for entire reconstruction.

TABULATED LIST OF HOSPITALS WITH SPECIAL APPEALS.

Name of town and hospital.	Date of appeal.	Amount required.	Amount received.	Purpose.
		£	£	
ASHFORD Hospital	1925	40,000	34,700	Debt on new hospital.
BEXHILL Hospital	1926	33,000	24,000	Debt on new hospital.
BIRMINGHAM Hospital Centre ..	1930	1,250,000	590,000	New hospitals and medical faculty.
CROMER and District Hospital ..	1929	20,000	14,500	New hospital.
DERBY: Derbyshire Hospital for Sick Children	1928	22,000	11,000	New wards and new nurses' home.
LONDON: The Princess Louise Kensington Hospital for Children..	1929	25,000	3,000	New nurses' home and administrative offices, to free ward space for 42 cots.
Tavistock-square Clinic for Functional Nervous Disorders	1930	400,000	7,000	Extensions.
MIDDLESBROUGH: North Ormesby Hospital	1929	30,000	28,500	New operating theatres and wards.

SPECIAL ARTICLES

THE SOURCE OF INFECTION IN PUERPERAL FEVER.

IN 1928 the Scottish Board of Health published a report by Dr. J. Parlane Kinloch, Dr. John Smith, and Dr. J. A. Stephen, entitled "Maternal Mortality in Aberdeen, 1918–1927, with Special Reference to Puerperal Sepsis." The reporters concluded, inter alia, that in puerperal sepsis, as in other streptococcal diseases, the essential mode of infection is by contagion (the term "contagion" being understood to embrace all the channels by which any droplet or spray infection is spread); and that an important factor in contagion is a streptococcal carrier condition in physicians, nurses, or patients. The same department now publishes a report by Dr. Smith on a routine bacteriological investigation of 221 cases of puerperal fever and 25 cases of septic abortion occurring in Aberdeen over a period of eight years, and an inquiry into the source of infection in 18 cases of puerperal fever and three cases of septic abortion.[1]

For eight years all cases of puerperal fever admitted to the Aberdeen City Hospital for Infectious Diseases have been made the subject of a routine bacteriological investigation. Blood and uterine cultures were made and any pus obtained was examined. The organisms secured were identified by the usual morphological and cultural tests, and when necessary the hæmolytic activity was examined after growing in 10 per cent. horse serum broth for eight hours at 37° C.

Of 196 cases the infecting organism was *Streptococcus hæmolyticus* alone in 120 cases, and *S. hæmolyticus* with other organisms in a further 29 cases. Three cases had sterile uterine swabs, and the remaining 44 showed *Bacillus coli*, *B. proteus*, staphylococci, gonococci, pneumococci, diphtheroids, and *S. viridans*, alone or in various combinations. The blood cultures from 177 cases showed *S. hæmolyticus* alone in 40, *B. coli* in 2, and *S. viridans*, *B. alkalescens*, pneumococcus (Type IV.), and *Staphylococcus aureus* in 1 each. Pus from 44 cases showed *Streptococcus hæmolyticus* alone in 36 and the same organism with staphylococci in 3, with *B. coli* in 1, and with both *B. coli* and *S. viridans* in 1. Of the 3 remaining, 2 showed staphylococci only and the other *B. fæcalis alkaligenes*.

Thus, 76 per cent. of cases showed *S. hæmolyticus* in the uterus; 22·9 per cent. showed it in the blood, and of those with secondary suppurative processes 93·4 per cent. showed it in the pus. Of the 46 cases with a fatal issue, 34 were infected with the hæmolytic streptococcus and 11 had sterile blood cultures; but of the latter, 6 yielded the organism post mortem. In 43 out of the 46 cases it was obtained from one source or another.

Of 24 cases of septic abortion, 4 died; the uterine cultures in 11 cases showed *S. hæmolyticus* alone, in 3 more the same organism with others, and various other organisms in 11.

There can, therefore, be no doubt in the present series of the rôle played by *S. hæmolyticus*.

[1] Causation and Source of Infection in Puerperal Fever. By J. Smith, M.D., D.Sc., M.R.C.P., D.P.H., Department of Health for Scotland, Edinburgh. H.M. Stationery Office. 1931. Pp. 54. 1*s*.

SOURCE OF THE ORGANISM.

Apart from the work of J. Nixon and H. D. Wright,[2] no effort seems to have been made to trace the source of infecting organisms in sporadic cases by modern bacteriological and immunological methods. In this investigation, as soon as *S. hæmolyticus* was found in a uterine culture, the various secretions and mucous membranes of the patient were examined, and throat and nose swabs were obtained from any persons who had been present at the confinement. When the uterine solution showed *B. coli*, specimens were obtained from the patient, but not from the attendants. The materials were cultured directly on sheep's-blood agar plates and in sheep's-blood broth. If the initial plates did not show the organism after incubation at 37° C. for 24 hours, the blood-broth cultures were also plated on blood-agar. The strains were then examined for their hæmolytic activity and their action in carbohydrate media. To prepare agglutinating sera numerous rabbits were immunised with killed strains of *S. hæmolyticus* and *B. coli*. Complete serological identification of the strains was established.

The report gives details of the examination in each of 21 cases, 18 of them being puerperal fever and 3 being septic abortion. The cultural characteristics of all strains of *S. hæmolyticus* were fully investigated and the results are given in a table. The majority gave the typical fermentation reaction—viz., acid in media containing saccharose, lactose and salicin, and no acid in media containing mannite, inulin and raffinose. Four strains from two sources produced no acid in lactose but were otherwise similar to the rest in their sugar reactions. The coliform strains showed considerable variation in their action on saccharose, but otherwise were much alike in that they produced acid in lactose, salicin and dulcite, and no change in adonite. In litmus milk they produced acid and clot, and they liquefied gelatin. They failed to grow in Koser's medium, produced indol but no methyl-carbinol, and in only one instance failed to give a positive methyl-red reaction. The cultural characteristics of the strains were, therefore, of only slight value in indicating

Case	Disease.	Infecting organism.	Source of organism with serological characteristics identical with uterine strains.
1	S. A.	*S. hæm.* and *B. coli.*	*S. hæm.* from patient's nose, and *B. coli* from patient's intestines.
2	P. F.	*S. hæm.*	Nose of nurse.
3	"	"	Throat of doctor.
4	"	*S. hæm.* and *B. coli.*	*S. hæm.* from doctor's throat, and *B. coli* from patient's rectum.
5	"	*S. hæm.*	Both from throat of same nurse.
6	"	"	" "
7	"	"	Nose and throat of student.
8	"	"	Not determined.
9	"	"	Infection of nail-bed of doctor's thumb.
10	"	"	Not determined.
11	"	*B. coli* only.	Patient's urinary tract.
12	"	*S. hæm.*	Throat of nurse.
13	"	"	Doctor's throat.
14	"	*S. hæm.* and *B. coli.*	*S. hæm.* from doctor's throat and *B. coli* from patient's urinary tract.
15	"	"	Septic focus on patient's finger.
16	S. A.	*B. coli.*	Patient's intestinal excretion.
17	P. F.	*S. hæm.*	Not determined.
18	"	"	Throat of nurse.
19	"	*B. coli.*	Patient's fæces.
20	"	*S. hæm.*	Throat of doctor.
21	S. A.	"	" "

S.A. = Septic abortion. P.F. = puerperal fever. *S. hæm.* = *S. hæmolyticus*.

[2] THE LANCET, 1929, i., 1242.

the common source of their origin. A study was undertaken to determine the incidence of the various serological types, and the results showed very diverse strains of *S. hæmolyticus* and of *B. coli*. The results are summarised in the above table.

Thus, in a group of 18 cases infected with *S. hæmolyticus*, the source of infection was determined in 15, of which 13 were cases of puerperal fever and 2 were cases of abortion. Of the former the strains were found to come from an extrinsic source in 12, and in every case but one that source was the throat or nose of the doctor, student, or nurse in attendance. In only 1 case could the infection be regarded as autogenous, and this patient was suffering from a streptococcal infection of the hand. In the 2 cases of abortion the source was extrinsic in one and intrinsic in the other, the organism being found in the doctor's throat in one case and in the patient's fæces in the other. Of the three cases of *B. coli* infection, two were puerperal fever and one an abortion with *B. coli* septicæmia. In one case of puerperal fever the organism was also found in the urine, and in the other case it was found in the fæces.

Importance of Carriers.

This investigation, therefore, again points to a carrier as the source of puerperal infection, the carrier being usually free from any gross signs. The impression left is that the majority of cases are produced by the physician or nurse actually introducing the streptococcus in the course of examination or manipulation. In all the 21 cases of puerperal sepsis the fæces and urine were examined, and in not one was a hæmolytic streptococcus found. Throat and nose swabs from one patient, nine doctors, and five nurses showed the organism.

The problem of prophylaxis is therefore the problem of the carrier, about whom little is known at present. Infection could, at any rate, be prevented if doctors, midwives, and nurses took appropriate precautions, such as the wider use of masks and the more effective antiseptic ritual for the hands recommended in the recent Interim Maternal Mortality Report of the Ministry of Health, 1930. The patient herself should be examined for septic foci and material should be submitted to bacteriological examination, and if the doctor has any significant septic foci he should also submit material. Infection by *B. coli* and other fæcal types seems likely to be carried up the vaginal canal by examination. H. W. Mayes has suggested sterilisation of the thighs, perineum, and vulva, together with the introduction of 4 c.cm. of 4 per cent. mercurochrome 220 soluble into the vagina. This report suggests that maternity beds in hospitals should be isolated by metal or glass screens, and that no patient should be examined or treated in the common ward. Labour and treatment should be conducted with modern aseptic surgical technique, including adequate masking.

MEDICINE AND THE LAW.

Burns from Hot-water Bottle: Unsuccessful Action against Surgeon and Anæsthetist.

IN the latest attempt to hold an operating surgeon liable for injuries unfortunately caused to the patient by burns from a hot-water bottle, there was a chance that Mr. Justice McCardie would pronounce some authoritative ruling on the legal position which would have given valuable protection to practitioners in similar circumstances in the future. The case, however, was settled before the defence was opened. It had become clear that the operating surgeon and anæsthetist could not possibly be held negligent, but this satisfactory result is only half the battle so long as practitioners can be dragged into the law-courts at great expense of time and money to defend themselves against allegations of negligence which ought not to succeed. In the recent case the proprietress of the nursing-home had admitted liability and had paid £600 into court—though of this latter fact the jury would be unaware. The surgeon and anæsthetist strongly denied negligence and the surgeon counter-claimed for £200 for professional fees. Under the terms of settlement the plaintiff took out the £600 in satisfaction of her claim for damages and an agreed sum for her costs was endorsed on counsel's briefs. She abandoned her action against the surgeon and anæsthetist, who were consequently awarded costs; it is understood that this award will not be enforced and that the counter-claim for fees, though successful, will also be forgone out of sympathy for the plaintiff's most regrettable injury. In announcing the settlement, Mr. Norman Birkett, K.C., made it clear that there never had been any complaint of the two practitioners' skill, care, and judgment. The allegation of negligence against them was based on their supposed duty to prevent such an accident as occurred. The facts and the answers of the plaintiff's own witnesses in cross-examination had made Mr. Birkett's allegation difficult to prove. A rubber hot-water bottle had been used to warm the operating-table in a nursing-home in North Wales. During the operation a nurse gave the bottle to a maidservant with instructions to fill it and place it in the patient's bed where there were already two stone hot-water bottles. After the operation the patient was carried to her bedroom on a stretcher; before she was moved from stretcher to bed, the two stone bottles were taken away but it was not perceived that the rubber bottle was in the bed beneath a mackintosh sheet and a draw sheet. The resultant burning (at the end of the spine and across the buttocks) was very serious; 18 months later the burn was not completely healed, and there remains a likelihood of permanent disability. In cross-examination, the nurse (a witness called by the plaintiff) agreed that it was the nurse's duty to look after hot-water bottles and to prevent patients from burning; she had never known an operating surgeon take part in filling hot-water bottles; if the surgeon did such a thing, she would regard it as an interference with the nurse's duties. As regards the anæsthetist's responsibility, the nurse agreed that the eyes of the anæsthetist must, like those of the surgeon, be always on the patient. When the rubber bottle was given to the maidservant, said the nurse, both surgeon and anæsthetist were fully engaged in attending to the patient. These answers, naturally, though they emphasised the importance of great care in the training of nurses, did little to assist the plaintiff's case against the two practitioners.

It is possible that some day the medical profession may undertake some collective system of insurance against patients' injuries whether or not the injuries are caused by circumstances over which the practitioner has control. The prospect is unlikely, though the legal profession (under conditions which are not wholly parallel) seems ready to consider some plan of fidelity guarantee by which solicitors as a whole will insure an individual client against the frauds of an individual solicitor; indeed in New Zealand contribution to an indemnity fund for compensating defauded clients is already obligatory upon all legal practitioners. Meanwhile, it seems scarcely

fair that surgeons and anæsthetists should be the target of charges of vicarious negligence in hot-water bottle cases largely because the plaintiff's action against maidservant, nurse, or nursing-home is not likely to yield substantial damages in hard cash. Parliament would be asked in vain to find time to pass even a one-clause Surgeons' and Anæsthetists' Protection Bill to limit liability for other people's unfortunate oversights. The only remaining hope is that our judges will some day take judicial cognisance of the routine of the operating-theatre and will promote procedure by which actions against surgeon or anæsthetist in such circumstances as we have described may be struck out at the earliest possible moment. Reading between the lines of the report of the case under discussion, one may reasonably assume that the judge brought strong pressure to bear upon the parties in the successful endeavour to obtain a settlement. The action was one in which the plaintiff's misfortune was sure of popular sympathy; it was the more necessary to see that the defendants' rights were not prejudiced on that account. Plaintiff's counsel, in announcing the settlement, admitted that he could not substantiate the charge of negligence against surgeon and anæsthetist. This means that, if the case had proceeded to a finish, the two practitioners must have been awarded costs, the counterclaim for fees must have succeeded with costs, and the judge would presumably have given the jury a direction on the non-liability of the practitioners which would have been important for future reference. Instead of this result, the counterclaim for fees (part of which must have represented out-of-pocket expenses) and the awards of costs are nullified by an agreement not to enforce them. It is good that all charges of negligence against surgeon and anæsthetist are frankly and fully withdrawn; it is clear that the withdrawal is not part of a compromise on the issue of negligence. Everyone will admire the generous forbearance of the two practitioners, but many will regret two features of the case—first that, in the benevolent atmosphere created by the judge's intervention, a settlement was partly purchased out of the pockets of innocent parties who were entitled to be indemnified, and secondly that the outstanding point of principle for which the two practitioners stood was not recorded in a judicial ruling.

The Jury of Matrons.

If (as happened the other day) a pregnant woman is sentenced to death, she is entitled to plead pregnancy. If the fact of pregnancy is established, she is entitled to be reprieved—not for her own sake but for the sake of the child which may be born. For the purpose of determining whether the woman is pregnant or not, there must be an inquiry by a panel of 12 matrons (or "discreet women") chosen from the women present in court. The procedure is of very great antiquity. The Commissioners who were appointed to draft a criminal code 50 years ago proposed to abolish the anachronistic jury of matrons and to substitute an examination by one or more registered medical practitioners. This sensible suggestion, however, has not yet been adopted. The existing procedure is hardly defensible. More than once the jury of matrons has returned the wrong verdict; on one occasion the mistake would have led to an early execution if the Home Secretary had not intervened. Moreover, the historical development of the inquiry has proceeded on a false physiological basis. The law has distinguished between the state of the woman who has conceived and is "barely with child" and that of the woman who has conceived "with quick child," as though the old idea were true that the fœtus is not alive until the woman "quickens." Since in any case the jury of matrons would not nowadays be allowed to come to a decision without the assistance of medical evidence, it is the more desirable that the question of the prisoner's pregnancy should be decided directly by medical testimony instead of being referred to a tribunal which is a curious survival of times when medical knowledge was neither far advanced nor easily available. It may be added that the decision of a jury of matrons is also obtainable in civil cases when there is a risk of imposture in matters of legitimacy and to prevent frauds through suppositious children. In civil cases, however, the idea of requiring the services of 12 matrons or discreet women is even less justifiable than in criminal proceedings where there is at any rate some analogy with the theoretic protection of trial by a jury of one's peers.

NOTES FROM INDIA.

(FROM OUR OWN CORRESPONDENT.)

DEFICIENCY DISEASE.

MUCH vague ill-health amongst the poorer population in India is due to diet which is deficient in one or more vital elements, and it is probable that many actual outbreaks of deficiency diseases pass unnoticed. Beri-beri in particular must occur fairly frequently, if the facts were known. Some cases have recently come to light in the house of a medical practitioner in Noakhali district. Of 14 inmates 8 were attacked, a child of 18 months, who was living on milk, and five others who only took food occasionally in the house, escaping. A similar outbreak occurred in the house of a neighbouring cultivator. In this, out of 12 inmates, all but one, also a child living on milk, were attacked. The cause is stated to have been the use as a staple diet of milled rice, which was stored in the dark on a damp mud floor. Dr. Margaret Balfour, who has been investigating infantile mortality in Bombay, has drawn attention[1] to another possible manifestation of the results of deficient diet. She has come to the conclusion that prematurity is more frequent in India than in England, and thinks that it may be an important factor in the higher infant mortality. A remark in the report of the health officer of Bombay is quoted to the effect that debility and prematurity play a great part in the excessive number of deaths in the first four weeks of life. An investigation of the diets of women of different classes in Bombay by Wills showed that the food of the women of the hospital class who had given birth to premature children was deficient in vitamins A, B, and C, with a specially marked deficiency in B. The diet of these women consisted chiefly of polished rice and white bread. Miss Balfour suggests that B deficiency may lead either to weakness of the germ-cells, a failure of the growth impulse of the fœtus, or premature thinning and separation of the decidual membrane.

THE CLEARING OF JUNGLE TRACTS.

There is a very old belief that tropical forests are always associated with malaria, and that the clearing of jungle tracts is the first step in their improvement, from a sanitary point of view. Mr. M. O. T. Iyengar,

[1] Indian Medical Gazette, November, 1930.

entomologist to the Public Health Department of Bengal, in a recent paper, examines this question, and comes to the conclusion that, in Bengal at least, primitive jungle—i.e., uninhabited land covered with forest trees, shrubs or brushwood tall and thick enough to produce shade, and prevent much exposure of the ground to sunlight—is more free from malaria than are adjacent clearings. He points out that jungle anophelines, which breed and live inside the forest, and normally feed on wild animals, have ordinarily very poor chances of getting an effective feed of malaria, and the prospect of transmission to human beings is remote. Moreover the species most frequently found within the uncleared jungle are not carriers, whereas directly clearings are made *A. ludlowi* and other notorious carriers appear. It seems to be a fact that the bad reputation of jungle for malaria is due more to clearings and their human inhabitants than to the primitive conditions. One of the tragedies of tropical sanitation in the past has been the expenditure of large sums of money in clearing forest areas, with the idea that the public health would thereby be improved. In the Sunderbans, where Mr. Iyengar conducted part of his researches, the forest officials often live in small houseboats, anchored in creeks and channels, and he found that the best way to protect himself against malaria was to take his boat before sunset into the uncleared jungle area, and spend the night there.

A CASE OF POISONING.

The Indian medical jurist often has curious problems to unravel, and they are not made simpler by the prevalence of poisonous reptiles. It is generally believed that a large proportion of the many thousands of deaths which are returned annually under the head of snake-bite are really due to homicidal poisoning, or other crime, which can seldom be brought home in the country districts, owing to the practice of cremation and other reasons. An account in the *Times of India* (Mail Edition) of Dec. 13th, 1930, runs :—

"An extraordinary case of poisoning in which 45 persons have lost their lives is reported from Erode. The victims of this terrible tragedy were students residing in the hostel of the London Mission High School at Erode and a cook. They took their midday meal as usual recently, but shortly after died one after the other in spite of medical aid. The hostel cook who prepared the meal also died as a result of eating it. A poisonous reptile (called *aranai* in Tamil), which is stated to have been found in the soup served to students, is believed to have been the cause of their deaths. There is a saying in Tamil that the bite of the *aranai* means instant death."

I do not know what *aranai* stands for but, so far as I am aware, snake poison, when taken by the mouth, is decomposed on entering the stomach, and has no poisonous effect, while lizards are innocuous. What was the sequel of this fatality is not reported, but presumably it would be a case for police inquiry.

THE INDIAN STUDENT.

The undergraduate of Indian descent comes in for a good deal of criticism, which is sometimes of a rather unfriendly nature. He is far removed from the average English student in many of his most prominent characteristics, and it is therefore hardly fair to judge him by the same standards, apart from those arbitrarily set in examinations, where he is well qualified to hold his own. One of his most obvious traits is a tendency to the abstract rather than the concrete. From the medical standpoint one would expect him to make a better physician than surgeon, and this I think is usually true. Treves once said that every medical student ought to have a course of carpentry. If this applies in England it is still more necessary in India. An English student at all events comes to the dissecting room having learnt in childhood to avoid striking his thumb with a hammer, and with some knowledge of a knife and fork. A high-caste Hindu has had neither of these preliminary advantages, and it is to his credit that he sometimes does well at games. That he has many other good qualities is testified to by Sir Ross Barker, in his convocation address at the Agra University. From a very extensive acquaintance Sir Ross said that he was a profound believer in the qualities, both mental and moral, of the Indian undergraduates of the present day. He spoke of their industry, grit, and perseverance, shown often amidst great difficulties and obstacles, and said that he admired especially their good temper and philosophical demeanour under adversity.

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

PRECAUTIONS AGAINST INFLUENZA.

THE Secretary of the Department of Local Government and Public Health has addressed to all public health authorities in the Free State a letter advising the adoption of protective and preventive measures against influenza. He points out that, while there is neither a heavy enough incidence of influenza nor a heavy enough mortality to give rise to immediate anxiety, yet plans should be ready for dealing with any threatened outbreak, for the disease has recently occurred in several parts of the country. Sanitary authorities are recommended, in conjunction with their medical officers of health, to formulate schemes for the coördination of all medical, nursing, and public health services in their districts. In particular, provision should be made for medical assistance, including nursing, for patients suffering from pneumonia, whether due to influenza or not. Hospital accommodation should be in readiness for the treatment of sudden or severe cases of influenza. The sanitary authority might consider the question of enlightening the public, by means of leaflets and posters, in regard to the measures to be adopted for personal protection. It is suggested that endeavours should be made to establish a voluntary system of notification of influenza, which is not at present on the list of diseases compulsorily notifiable. Attention is drawn to the serious pulmonary, renal, and nervous complications and sequlæ which may be associated with even a mild attack. Advice is given about the avoidance of overcrowding in public assemblies, the propriety of closing schools during the prevalence of an epidemic, and the social self-isolation of infected households. Warning is given of the special danger of indiscriminate spitting.

HOSPITAL CHARGES TO INSURANCE COMPANIES.—The Yorkshire voluntary hospitals committee has decided that the payment made by insurance companies in respect of motor accident cases should be not less than 11*s.* 6*d.* per day.

HONOUR TO A MEDICAL MAN.—The Bangor city council have conferred upon Dr. Griffith Evans, Bangor, the honorary freedom of the city in recognition of the distinguished services rendered by him to the cause of science. Dr. Evans is 96 years of age. His work as a medical man and veterinary surgeon in India and in the United States had reference to the discovery of the trypanosome, the investigation of an infection among army horses in India, which he found was due to anthrax, and in 1880 the cause of "surra," a disease very fatal to horses and camels in the Indian Army.

CORRESPONDENCE

A SUGGESTED CAUSE OF NEPHROSIS.

To the Editor of THE LANCET.

SIR,—After reading the lecture upon nephrosis by Dr. T. Izod Bennett, published in your issue of Jan. 17th (p. 115), I beg to offer the suggestion that some of these conditions of nephrosis may be purely bacterial in origin. During the war in the trenches one saw cases of nephritis which developed suddenly, with no symptoms except œdema of the face and feet, and a feeling of lassitude. These cases went at once to hospital and one saw them no more. During 1917–18 when in charge of a war hospital at home, I had cases admitted with similar symptoms to those which I had noticed in the trenches. Amongst some 1400 odd patients admitted from January, 1917, to November, 1918, I had 16 such cases under my care, with œdema of the face and feet, albumin in the urine, and, microscopically, leucocytes, hyaline and granular tube-casts, and cocci. No complaints, beyond feeling tired and slack, were made, and no blood pressure was over 140 mm. Hg.

The urine was examined as follows. Immediately after being passed into a sterile flask, 20 c.cm. was centrifuged in sterile glasses, the supernatant fluid was poured off, and the residue distributed between two large sloped agar tubes, and incubated. In every case many colonies of cocci grew, never less than ten colonies, frequently more. These colonies resembled *Staphylococcus aureus*, but when placed in normal saline to make a vaccine these organisms did not make a uniform emulsion, such as *Staphylococcus aureus* does, but required beads to break them up. I regret that no further bacteriological examinations were made with these cocci, owing to the pressure of work. The vaccine, autogenous in every case, given in very small doses to begin with, proved most satisfactory. In every case the œdema cleared up, and the bacilluria and albumin disappeared. The only other treatment adopted was rest in bed, and a dietary largely composed of milk, which was so unpopular that it was rarely persisted in for more than a week. These 16 cases were all discharged within two months of admission and I lost sight of them.

At the end of November, 1918, a nursing sister who had served in France since 1914 was invalided out of the service, as a case of chronic nephritis. She had been in hospital for three months under treatment, and her œdema had disappeared, but when I saw her she felt unfit and lacking in energy, and as she was warned that she would not be able to follow her vocation of nursing she was naturally depressed. The urine in her case was drawn off by catheter. It contained a large quantity of albumin, while hyaline and granular tube-casts, many leucocytes, and a few cocci were seen on microscopic examination. Her blood pressure was round 130 mm. Hg. The patient was treated with an autogenous vaccine, and within six weeks the symptoms had cleared up. She is to-day in active practice as a nurse and has had no return of the nephritis. About the same time that I saw the nurse I was asked by a colleague to examine a specimen of urine microscopically. The patient, a man of about 50 years of age, of great physical and mental ability, had developed nephritis, and the prognosis given him was not hopeful. The urine showed a fairly acute condition, because, in addition to the symptoms in the previous cases, a few red blood corpuscles were present. The cocci in this case I believed to be *Staphylococcus aureus*. I suggested trying an autogenous vaccine, which was done with good results. The condition cleared up in two months and the patient is as fit to-day as he was previous to the attack of nephritis.

Since these cases passed through my hands I have had during the past 12 years seven cases of œdema with albumin, leucocytes, tube-casts, and bacilli in the urine. There were no symptoms except œdema, and no symptoms of arterial tension except in one case. The bacteriological findings in these seven cases were as follows:

Streptococci and colon bacillus ..	1 case.
Staphylococcus aureus	3 cases.
Colon bacillus	2 ,,
Micrococcus tetragenus	1 case.

All these cases under autogenous vaccine treatment cleared up, except the case with tetragenous infection. The patient is a man of 65 years of age, his arterial tension is 200 mm. Hg, and his arteries are atheromatous.

My only excuse for recording these cases is the fact that so far as I have read no one has suggested that these cases of nephrosis may be of bacterial origin.

I am, Sir, yours faithfully,

Murthly, Perthshire, Jan. 19th. 1931. L. C. BRUCE.

HÆMATEMESIS AS A SYMPTOM OF PEPTIC ULCER.

To the Editor of THE LANCET.

SIR,—Writing in THE LANCET of Dec. 20th, 1930 (p. 1346), Mr. Basil Hughes remarks that in 25 years' experience he can recall only two cases of true hæmorrhage from a gastric or duodenal ulcer. He goes on to say:—

> "Such experience shakes one's faith in hæmatemesis as a trustworthy symptom of gastric or duodenal ulcer, yet text-books still proclaim it and students are still taught it. If it is a symptom, it is a very rare symptom; such are my surgical and post-mortem findings."

As it seemed that such a statement might be misleading to the medical student, the records of cases of gastric ulcer treated in the wards of St. Thomas's Hospital during the year 1929 were consulted. The evidence available apparently vindicates the text-books. A total of 184 cases were classified as gastric ulcers; 20 cases were regarded as "non-proven," in the absence of barium meal examinations; in 25 other cases the diagnosis was made on the history, &c., and on the presence of suspicious X ray signs, such as pyloric spasm and local tenderness on manipulation. In the remaining 139 cases the diagnosis was considered to be beyond cavil on the following evidence:—

(1) 105 cases were verified either by the presence of a definite Haudek crater on barium meal examination, or by the finding of an ulcer on operation.
(2) 21 cases were operated on for perforated ulcer (3 died).
(3) 13 cases were verified at autopsy.

Now of these 139 cases a history of hæmatemesis was obtained in 42—i.e., an incidence of 30 per cent. at least, leaving out a good many suggestive but unproved cases. Of the cases examined at autopsy eight had died as a direct result of hæmatemesis—i.e., 6 per cent. of the proved cases. In seven of these an eroded artery was easily demonstrated at the base, or in the wall, of the ulcer. The remaining case showed a lesser curve ulcer with no bleeding point,

but immediately opposite, on the greater curve, was a circular area of acute hæmorrhagic gastritis.

It is always risky to argue from statistics or from personal experience, but these figures seem to indicate that it is still legitimate to proclaim hæmatemesis as one of the most trustworthy symptoms of gastric ulcer. I am, Sir, yours faithfully,

THOMAS MORTON,
Jan. 20th, 1931. Medical Registrar, St. Thomas's Hospital.

INSULIN PHOSPHOTUNGSTATE.

To the Editor of THE LANCET.

SIR,—It was with much interest and great admiration of the energy of Dr. R. D. Lawrence that I read his note in your last issue (p. 184). A month or two ago I referred to the fact that I was making observations on this substance and that any way its use for any lengthy period could not be advocated until evidence was forthcoming that it was innocuous. This cannot be determined for some time. If the phosphotungstate of insulin proves beneficial in diabetes (I am not in a position to make any assertion at the moment) I should expect its effect to be quite different to that of a soluble salt injected under the skin, because I imagine that its action would be due to the insoluble salt being passed through the intestinal wall, undergoing decomposition in the tissues and thus liberating insulin. The latent period would be considerable. Again the exact nature of the preparation may have an effect. If dried phosphotungstate be given in suspension it may not have the same effect as the salt which has not been dried. This fact may be illustrated; I found that if the tannate of insulin prepared by adding tannic acid and buffer salts to a solution of insulin hydrochloride were injected subcutaneously there was only a slight delay in its action, whilst Dr. Hagedorn told me that he prepared and dried tannate of insulin which although containing active insulin did not lower the sugar in the blood of animals which were injected with a suspension.

I have every confidence in the accuracy of Dr. Lawrence's observations, but cannot accept his lightning conclusions as proven.

I am, Sir, yours faithfully,
Monks Corner, Marlow, Jan. 24th, 1931. O. LEYTON.

To the Editor of THE LANCET.

SIR,—It is quite hopeless to expect any internal insulin ever to produce acute hypoglycæmia, or to suppose that insulin and hypoglycæmia are inevitably linked. It is not the insulin itself, but its sudden application by subcutaneous injection, that produces acute hypoglycæmia. Even then hypoglycæmia can be prevented either by previous tying of arms and legs (Bürger and Kramer), or by making the injection very slowly, drop by drop. Insulin produces hypoglycæmia only where it gets a chance of operating on the muscular glycogen. This chance is handicapped when the injection is made intravenously and still more when insulin is given by mouth. In this case it first reaches the hepatic glycogen (Collazo and Rubino).

In order to demonstrate the influence of insulin taken internally on the concentration of the blood-sugar special precautions must be taken. The amount of the hepatic glycogen must first be diminished, otherwise its virtual hypoglycæmic power will be masked by the glycogen mobilised in the liver. For this purpose H. N. Mukherjee has recommended making the diabetic fast completely for at least 16 and the rabbit even for 24 hours before giving them insulin by mouth. Dr. Lawrence does not make it clear if this precaution was observed or not. The precaution is indispensable only for the demonstration of acute hypoglycæmia, not of the antidiabetic effect of insulin taken internally. This effect is characterised by a slow but steady increase of the patient's tolerance for carbohydrates within the first ten days of regular treatment with internal insulin, as has been pointed out before (see THE LANCET, 1928, i., 159).

I am, Sir, yours faithfully,
Saarbruecken, Jan. 25th, 1931. F. W. FORNET, M.D.

ACUTE TOXIC HEPATITIS AFTER ACRIFLAVINE.

To the Editor of THE LANCET.

SIR,—A large number of drugs are known to be capable of causing liver damage, and Dr. Cullinan in your last issue has called attention to the possible danger in this respect of acriflavine. This has long been used as an external antiseptic, and has also been given by mouth without harmful effects. More recently it has been administered by intravenous injection in the treatment of gonorrhœa. In a series of 100 cases of gonorrhœa treated by intravenous injection of 10 c.cm. of 1 per cent, acriflavine three times weekly three cases of jaundice occurred. The average amount of acriflavine given was 0·78 g. The average time of onset of jaundice was 112 days after the last injection, and its average duration 46 days. In all cases jaundice was well marked and was catarrhal in type with enlargement of the liver and, in one case, of the spleen also. Constitutional symptoms were severe. The effect of the acriflavine on the urethritis will be described at a later date. Yellowness of the skin may occur very soon after the intravenous injection of acriflavine, but this is transient and not due to hyperbilirubinæmia, since the quantitative van den Bergh reaction is normal. It should be noted that the icterus index as a test for latent jaundice is fallacious in these cases.

I am, Sir, yours faithfully,
C. ALLAN BIRCH,
Medical Registrar, Liverpool Royal Infirmary.
Jan. 24th, 1931.

To the Editor of THE LANCET.

SIR,—Dr. E. R. Cullinan's letter raises two issues.

(1) Is acriflavine taken orally "justifiable" in the treatment of gonococcal urethritis? My own observation during five years' use of acriflavine tablets gr. ½, administered orally three or four times a day, for that condition, gives the answer—yes.

(2) Is acriflavine taken orally "unjustifiable" by reason of the appreciable risk of its causing toxic jaundice? During the last five years over 2500 of my male patients suffering from urethritis, in the majority of whom the gonococcus was demonstrated, have taken by mouth for periods varying from two weeks to five months, continuously, an acriflavine tablet gr. ½ three to four times a day. In all of them the drug was absorbed—as the colour of the urine clearly showed. (In fact, over 100,000 tablets have been issued to these patients.) One man, only, after eight weeks on acriflavine gr. ½ t.i.d. per os developed slight jaundice four weeks after ceasing to take the acriflavine tablets. This jaundice disappeared after one week's out-patient treatment by mild laxatives.

Six men only complained of nausea which ceased on discontinuing the acriflavine by mouth.

I therefore submit that within the above-stated therapeutical limits the danger of toxic hepatitis from acriflavine per os is negligible.

I am, Sir, yours faithfully.

H. M. HANSCHELL,
M.O. in Charge, V.D. Clinic, Seamen's Hospital,
Jan. 27th, 1931. Royal Albert Dock, E.

PASTEURISATION OF MILK.

To the Editor of THE LANCET.

SIR,—The ideal "safe milk" is free from pathogenic organisms and retains its nutritional values. It can be obtained from healthy tubercle-free cattle and is drawn under hygienic conditions and protected from contamination in transport from the source to the consumer. Mr. T. B. Macaulay has proved that this can be done on a small scale; at his experimental farm near Montreal, Canada, there is a herd of Friesian cattle; each animal is tuberculin-tested at regular intervals, and for the seventh year in succession the tests have been negative; procedures are adopted for ensuring the purity of the milk, these having proved successful in reducing the bacterial content considerably. The Federal Government of Canada offered free tuberculin-testing to live stock owners in 1897, and plans for eradicating tuberculosis in cattle have been evolved as the result of experience during the succeeding years. It is estimated that the average proportion of tubercle in cattle is less than 5 per cent. at the present time.

The incidence of tuberculosis in cattle in England is estimated at a much higher figure and there is evidence of a large amount of infection in pooled raw market milk. Dr. R. Marguerite Price, bacteriologist to Toronto University, in her studies on "Bovine Tuberculosis and its Relation to Infection in Children" in the Toronto area, has come to the conclusion that pasteurisation of, or boiling, milk prevents bovine tuberculosis in children, and Dr. Harold Parsons produces clinical evidence in support of this conclusion. Statistical evidence in favour of pasteurisation has been produced by Dr. Shirley Wynne, commissioner of health for New York, and the health officers of other large American cities. The question therefore arises, in view of the large amount of bovine infection in this country, should pasteurisation be adopted generally?

In Canada and U.S.A. the generally accepted opinion appears to be that pasteurisation does not materially impair the nutritional properties of the milk. There is evidence, however, that heating milk reduces the amount of vitamin D and available calcium; it also destroys certain organisms which may aid digestion in infancy. As milk is an essential article of diet in infants and young children and as there is a possibility of pasteurisation impairing the nutritional qualities, would it not be safer to give Certified or Grade A (T.T.) milk to infants and young children and reserve pasteurised milk for older children and adults?

Should not pasteurisation of milk even for these individuals be regarded as a temporary expedient only and efforts be directed towards obtaining a general supply of milk free from pathogenic organisms with its nutritional qualities unimpaired?

I am, Sir, yours faithfully,

HAROLD VALLOW,
Tuberculosis Officer, City of Bradford
Jan. 22nd, 1931. Anti-tuberculosis Centre.

MYOMECTOMY.

To the Editor of THE LANCET.

SIR,—I read with much pleasure the leading article in your last week's issue commenting upon my Hunterian Lecture, and beg to answer the pertinent questions.

Of the 30 women who conceived after myomectomy the tumours removed were single in 13 cases and multiple in 17 cases. The numbers of the fibroids removed from the members of the last group were respectively: 32, 29, 21, 14, 14, 11, 10, 9, 8, 7, 7, 5, 5, 5, 4, 3, and 3. I cannot with exactitude give the positions occupied by the tumours as I have no records, but the vast bulk of them were interstitial. Neither can I say how often the uterine cavity was opened, as I do it so commonly. It certainly was opened in all the cases in which the number of fibroids removed was considerable. As regards the "hood" operation. The uterus when refashioned in this way more nearly approximates to the appearance of the normal organ than by any other method. All the patients on whom I have performed it have done well, and two of them are amongst the group who subsequently bore children. The labours in both cases were natural.

My thesis was not that myomectomy should supersede hysterectomy in the treatment of fibroids, but rather that it should be the "operation of inclination" in all cases, and the operation of choice in a considerable number.

I am, Sir, yours faithfully,

Devonshire-place, W., Jan. 27th. VICTOR BONNEY.

LEAKAGE FROM OXYGEN CYLINDERS.

To the Editor of THE LANCET.

SIR,—I agree with Dr. Roffey that oxygen cylinders should be tested before issue by chemists, and I believe this is commonly done either by testing weight or pressure. I find a more common trouble is that oxygen is lost by leakage in the patient's house; the valves at present in use are often so stiff that it is almost impossible to turn them off completely between administrations, unless there happens to be a strong male relative available. Also when turned on, it is sometimes difficult to prevent a sudden rush of oxygen, the noise of which is most disturbing to a seriously ill patient. It should not be difficult to devise a valve that could be easily operated. Of course the change over to efficiently acting valves would involve expense to the makers, but it would be a boon to patients and those who are called upon to use the apparatus.

I am, Sir, yours faithfully,

Tunbridge Wells, Jan. 25th, 1931. R. D. AYLWARD.

MOTIVES AND MECHANISMS OF THE MIND.

To the Editor of THE LANCET.

SIR,—If I understand Dr. A. T. Todd's letter correctly we are to abandon modern psychopathology because it is libidinous and ridiculous. Apparently the fact that it may contain the elements of truth is of no consequence. If Truth be unpleasant or apparently ludicrous it must be suppressed at all costs.

All great discoveries arouse both abuse and ridicule. The lay public rocked with delight at the idea of evolution. The bacterial theory of disease was regarded as disgusting.

Because patients are given explanations (which

frequently cure them) instead of bottles of medicine (which do not) it is foolish to say that they are not being treated.

But it seems a great shame that more and more clinics for the treatment of early mental disease are springing up—Dr. Todd could save all this expense with kaolin, acids and (Ye gods!) raw cabbage.

I am, Sir, yours faithfully,

London, Jan. 27th, 1931. CLIFFORD E. ALLEN.

THE PROBLEM OF REJUVENATION.

To the Editor of THE LANCET.

SIR,—Under this title Dr. Lorand gave an address to the Hunterian Society, an abstract of which appears in your columns to-day. His address was a résumé of his experiences at Carlsbad, and its practical lesson was that old age could be considered as a condition of general auto-intoxication, so that the logical way of rejuvenation would lie through dietetic methods—that is, through the stomach and the intestines. In speaking of the consequences of intestinal auto-intoxication he recommended the regular and thorough cleansing of the bowels, saying that one of the best methods was the "entero-cleaner bath." His words, which are quoted in your columns, are not as clear as they might be, and it is my recollection that he added that an apparatus known as the gymnacolon was equally good. I should be glad to know exactly what Dr. Lorand meant by an "entero-cleaner bath." Does the word "bath" refer to a bathing of the intestines or the body. The apparatus he mentioned, the gymnacolon, is for continuous colonic irrigation, the patient lying on a specially constructed chair. Is he referring generally to colonic lavage by an entero-cleaner bath, or is he advocating the repellent technique by which a patient is irrigated while he is lying in a bath? This latter procedure is, in my opinion, most unhygienic, owing to the fact that it is impossible to boil the apparatus between cases, and that there is always a certain amount of leakage into the bath.

I am, Sir, yours faithfully,

Jan. 24th, 1931. V. R.

PUBLIC HEALTH SERVICES

REPORTS OF MEDICAL OFFICERS OF HEALTH.

A Survey of 1929.

DURING the last ten months we have commented on upwards of 100 reports, and it may be of interest to summarise the impressions left by their perusal. The year 1929 will be remembered as the worst influenza year since 1918. It was also extraordinary as regards weather conditions. Ushered in by fog there was record-breaking cold weather in the first two months, to be followed by a prolonged drought, and finally in the last months of the year by a very heavy rainfall with floodings. The rainfall for the whole year was deficient and the hours of bright sunshine were above the average. It was, therefore, a year of meteorological extremes. It was also a notable year, as preparatory to the great changes under the Local Government Act, 1929, which came into force on April 1st, 1930. The various authorities were preparing their schemes and arranging to put the poor-law institutions to better use. In many cases hospitals were transferred in anticipation. County councils were specially considering the reorganisation of isolation hospitals, while county districts were looking forward to financial help for water-supply and sewerage schemes. In the towns efforts were being made to secure better coöperation between the various departments of the public health service. The effort to avoid overlapping results in making the work more interesting for the staff. Thus the tendency is to have assistant medical officers interchangeable between the departments, and nurses who carry out health visitation for all public health purposes.

GENERAL SANITATION.

Housing.—In a few districts housing shortage was said to be almost overtaken but in many it was still acute. Houses at lower rentals are in demand everywhere, and the reported overcrowding of municipal houses by sub-letting is one indication. A few districts are trying to meet the demand for cheaper houses. Portsmouth has adumbrated a scheme for slum clearance and the rehousing of the slum tenants in municipal houses with abatement of the rental in respect of children. Slum clearance has not been attempted except on a small scale. Several reports refer to the need for providing municipal houses for overcrowded families, undesirable tenants, and families infected with tuberculosis. In the metropolitan area the county council estates are too far off to benefit the poorer classes in the boroughs who have to live near their work. The L.C.C. allocate half their houses to the borough councils and they make the useful stipulation that every effort should be made to prevent the vacated houses becoming again overcrowded. In some districts—e.g., Kensington—Section 3 of the Housing Act, 1925, which enables the authority to renovate the house in the default of the owner has been found very useful, but in most districts this section was little used. Many county medical officers of health, especially in Scotland, are very enthusiastic about the Housing (Rural Workers) Act, 1926, but on the whole the advantage taken of this Act has been disappointing. There are signs, however, that the new Housing Act of 1930 will be taken in hand more seriously than its predecessors by the local authorities which have to administer it.

As regard *refuse*, experiments have been made in some districts with dustless removal plants. There have been many complaints with regard to the management of tips and the system of controlled tipping has improved matters somewhat.

The prevention of *rivers pollution* is arousing more interest and the establishment of rivers boards meets with more favour. There is more activity with regard to sewage disposal schemes, and efforts are being made by the trades concerned to deal with the nuisances caused by trade wastes. On the other hand, the development of scattered building estates adds to the difficulties of authorities, which have to deal with rivers pollution.

No special progress has been made with *smoke abatement*. Regional committees with statutory powers are difficult to organise owing to local jealousies. Domestic smoke is now definitely recognised as the worst offender in causing atmospheric pollution. Several health authorities have followed the example of Salford in using only smokeless fuel in their offices. Unfortunately very little smokeless fuel is available as yet for would-be consumers.

MILK-SUPPLY.

The misleading nomenclature of graded milks continues to give rise to criticism. There was no evidence of any improvement in England in the percentage of tuberculous milks as the result of recent legislation, but such veterinary inspection as has been inaugurated has not had time to have an effect, and without routine inspection there is little likelihood of early notification of infectious cases by the farmers. The Scottish counties have been more active in providing veterinary inspection, but as a

rule it has not been possible to make the inspection at sufficiently short intervals. It is found, however, that veterinary inspection not only improves the sanitary condition of the dairy farms, but leads to economic feeding and milk recording. Several English county medical officers of health advocate more sampling of milk for tubercle by the districts, with a view to the earlier detection of animals giving tuberculous milk. It cannot be said that the follow-up by the county authorities of tuberculous milk reported by outside authorities leads to satisfactory results as the offending cow is only discovered in a small percentage of cases.

INFECTIOUS DISEASES.

The *influenza* epidemic coincided in most places with the severe weather of February. Districts attacked towards the end of February came off better owing to the improved weather in March. The birth-rate was lower than ever and the increased deaths caused by influenza and respiratory diseases resulted in many districts in an excess of deaths over births for the year.

The opinion seems to be growing that there is too much hospitalisation of *scarlet fever*, and that this disease, especially with antitoxin as an adjuvant, might very well be treated at home, thus setting free beds for more serious diseases, such as pneumonia. The duration of the stay of scarlet fever cases in hospital has been much reduced and the use of antitoxin is becoming general.

Diphtheria in most of the districts had a higher case-fatality than in the previous year, and the complaint is widespread that antitoxin in adequate doses is not given early enough. In some isolation hospitals the intravenous administration of antitoxin in very large doses has been efficacious in saving cases admitted in an apparently hopeless condition.

It is becoming customary to immunise scarlet fever cases admitted to hospital against diphtheria and vice versa. Immunisation schemes against diphtheria are not growing rapidly, and a county medical officer suggests that general practitioners should be in a position to offer immunisation to those who desire it.

Most of the cases of *typhoid fever* notified had an untraceable origin whilst a certain proportion were attributed to carriers. The varieties of typhoid nowadays seem to have no preference for the autumn but occur at any time of the year.

Serum for the prevention of *measles* has not come into general use. At the Birmingham City Hospital, when the supply of serum from convalescents had run short, serum from young probationers, who could give a clear history of an attack of measles in childhood, proved a quite satisfactory substitute.

The deaths from *encephalitis* frequently exceeded the notifications owing to the inclusion of the deaths of those who contracted the disease in previous years, when the disease was more prevalent. The provision of institutional accommodation for post-encephalitics is in statu quo, pending the allocation of the ex-poor-law buildings.

SPECIAL SCHEMES.

Maternity and Child Welfare.—Many specially planned centres were opened, sometimes combined with maternity and baby hospitals, and sometimes accommodating all the various clinics. The need for the appointment of obstetricians for antenatal clinics is being better realised, and in some cases consultants have been appointed not only for puerperal fever and pyrexia, but for difficult labours. It is found that the appointment of consultants and the provision of maternity beds leads to more effective notification of puerperal fever.

In the counties the covering of the whole area with a nursing and midwifery service proceeds, but in some cases slowly. Many *orthopædic* schemes have been extended during the year.

A general lack of institutional accommodation for *mental defectives* is reported.

Some of the oil companies are taking an interest in *cancer* research work in Manchester. The experience of Leicester and Willesden appears to indicate that early diagnosis and early operation are more likely to be secured through the persuasive efforts of a municipal centre than by the establishment of an early diagnosis clinic at a general hospital.

Cardiff has been added to the districts which have a hospital and special clinic for the supervision and treatment of early *rheumatic* manifestations in children.

Improved facilities have been provided for the *venereal disease* clinics in several districts. The percentage of default varies much as between one scheme and another (e.g., Edinburgh and Glasgow). The attempt to follow up defaulters has brought out the fact that in a large percentage of cases a wrong address is given. Good results are reported by Portsmouth from the treatment and following-up of congenital cases.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED JAN. 17TH, 1931.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 187 (last week 228); scarlet fever, 1768; diphtheria, 1327; enteric fever, 23; pneumonia, 1726; puerperal fever, 70; puerperal pyrexia, 117; cerebro-spinal fever, 29; acute poliomyelitis, 2; acute polio-encephalitis, 2; encephalitis lethargica, 20; dysentery, 15; ophthalmia neonatorum, 81. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on Jan. 20th–21st was as follows: Small-pox, 225 under treatment, 8 under observation (last week 215 and 3 respectively); scarlet fever, 1585; diphtheria, 1918; enteric fever, 10; measles, 89; whooping-cough, 171; puerperal fever, 30 (plus 12 babies); encephalitis lethargica, 121; poliomyelitis, 1; "other diseases," 91.[1] At St. Margaret's Hospital there were 19 babies (plus 8 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, including London, there was no death from small-pox, 1 (1) from enteric fever, 94 (0) from measles, 9 (5) from scarlet fever, 33 (4) from whooping-cough, 39 (8) from diphtheria, 60 (10) from diarrhœa and enteritis under two years, and 146 (27) from influenza. The figures in parentheses are those for London itself.

Thirty-five fatal cases of measles were reported from Liverpool, 10 from Bristol, 8 from Hull, 6 from Nottingham, 5 from Birmingham, and 4 each from Birkenhead, Gateshead, and Newcastle-on-Tyne. Leeds and South Shields each recorded 3 deaths from whooping-cough. Diphtheria claimed 5 victims at Liverpool and 3 at Salford. Diarrhœa was credited with 12 deaths at Liverpool, 7 at Birmingham. The 119 fatal cases of influenza outside London are scattered over 52 great towns; 27 were reported from Liverpool, 7 from Birmingham, and 5 each from Bolton, Manchester, and South Shields.

The number of stillbirths notified during the week was 282 (corresponding to a rate of 42 per 1000 births), including 50 in London.

[1] The unusual size of this figure is due to the fact that patients suffering from certain infectious diseases, not admissible under the Public Health London Act, 1891, and which have hitherto been received into the general hospitals of the Council (the former poor-law infirmaries), are now, as a matter of convenience, admitted to the infectious diseases hospitals, as both these classes of hospitals are now administered by the London County Council under the provisions of the Local Government Act, 1929.

SUN BALCONIES AT COSSHAM HOSPITAL.—The Cossham ladies needlework guild has presented to this memorial hospital at Kingswood, Bristol, a series of sun balconies which were opened last week by the Sheriff of Bristol, Mr. H. G. Tanner. The collecting of the cost, £680, occupied the guild for ten years.

OBITUARY

HARRY DE RIEMER MORGAN, M.A. Oxf., M.R.C.S. Eng., D.P.H.

Dr. Morgan, whose death occurred at Aldenham, where he had been living in retirement for the last 20 years, was at one time a member of the council of the Lister Institute, and a keen worker in preventive medicine. After graduating at Oxford in 1887 he took his medical course at St. George's Hospital, qualifying in 1892, and made some voyages on Union line steamships before settling at Cockington, Devon, where he became medical officer of health. Taking the D.P.H. in 1901, he began his work at the Lister Institute, partly in coöperation with Mr. J. E. Barnard, partly with Prof. J. C. G. Ledingham. One of his first studies, published in our own columns, dealt with the presence of bacteria in the organs of healthy animals.

Prof. Ledingham writes: "Morgan's bacillus may possibly be the only link between the younger generation of bacteriologists and the H. de R. Morgan whose death took place at Aldenham on Jan. 15th, but to many of his old associates at the Lister Institute the news of his decease will awaken the kindliest of memories, for to them and his familiars in pre-war days he was known as 'Jimmy' Morgan. During the ten years preceding the war Morgan was a well-known and much esteemed figure in the bacteriological laboratories of the Institute. Except for a tenure of the Ernest Hart memorial scholarship, during which he carried out his investigations on the bacteriology of summer diarrhœa, Morgan was a voluntary worker, but he took his work very seriously and was most conscientious in its performance. Having been actively interested in public health before circumstances made it possible for him to settle down to laboratory work, Morgan applied himself to practical problems. He carried out in 1904 and 1905 investigations on the bacterial content of the tissues of healthy animals, and on the organisms associated with food poisoning so far as the differential criteria applicable at the time permitted. He was particularly concerned with the distribution of the group in the various domestic and laboratory animals. These earlier studies were the prelude to an intensive four years' study (1905–08) of the bacteriology of summer diarrhœa, in the course of which he drew attention to the importance as a possible ætiological agent of the organism first described by him as *Bacillus No. 1*, and which is now known as Morgan's bacillus or in American literature *B. morgani*.

"Morgan himself was extremely cautious in ascribing ætiological importance to his bacillus. Even now there is no conclusive evidence that this organism is ætiologically related to the condition with which it was first associated, or indeed to any specific human disease, but in saying so it has to be admitted that our knowledge of the pathogenesis of many acute intestinal disturbances remains very fragmentary when we exclude from consideration the much studied salmonella and dysentery groups. One hears little of summer diarrhœa now. Explosive outbreaks of toxic diarrhœa would appear in these days to be frequently due to some member of the dysentery group, and particularly the Sonne type. At the period of Morgan's study of summer diarrhœa he took particular pains to search for true dysentery strains in view of American experience, but failed to secure evidence that these came into the picture.

"Though the ætiological importance of Morgan's bacillus remains equivocal, it takes a secure place in systematic bacteriological literature. The last important work by Morgan was his study of various dysentery-like organisms recovered from English sources, mainly typhoid convalescents and suspected typhoid carriers. A certain proportion of these casual strains qualified for admission to the mannite-fermenting dysentery group, and it was inferred that genuine dysenteric infections were probably more common in this country than was then believed. This conclusion was reached before the war, which itself undoubtedly contributed materially to the wider distribution of dysenteric infection in post-war times."

FREDERICK MEADOWS TURNER, M.D. Camb., D.P.H.

Dr. F. M. Turner, who was for 34 years medical superintendent of the South-Eastern Fever Hospital, New Cross, died on Jan. 17th at the age of 64 years. Born at Norwich in 1866, son of the Rev. F. Storrs Turner, he went to the City of London School and took the B.Sc. Lond. before going up to Trinity College, Cambridge, with a scholarship. He graduated in medicine in 1892, continuing as house physician at Guy's Hospital, where he had done his clinical work, and studying also at Heidelberg. In the next year he entered the service of the Metropolitan Asylums Board as assistant to the late Dr. R. A. Birdwood at the North-Eastern Hospital. Promotion came quickly and four years later he was appointed superintendent of the South-Eastern Hospital, a post which, excepting for a brief interval when the hospital was rebuilding, he kept until the time of his death. With first-rate mental equipment he soon became a leading authority on infectious diseases, especially on the statistical side, and his report of 1906 on return cases of scarlet fever has become a classic. About the same time he contributed to *Biometrika* a paper on the correlation between vaccination and small-pox in the London epidemic of 1901–02. It was Turner who showed, in 1922, the rise in mean age of scarlet fever at times of epidemic prevalence. But his scientific interests were not confined to medicine. He studied biology in all its branches, working with Prof. A. E. Boycott on various biological problems, one of these being the inheritance of sinistrality in the snail, communicated to the Royal Society. Dr. J. B. Byles, to whom we are indebted for many of these biographical details, writes:

"Turner was an indefatigable worker devoted to his patients, his staff, and his hospital. He ruled by kindness and was beloved accordingly. His mild reproof was as efficacious as another's anger. He spared no trouble or inconvenience to give help or advice to any who needed it, and his colleagues in the service valued his sound judgment and considered counsel. Turner lived most of his life in the heart of London, but he knew and loved the country and was a delightful companion on a ramble. One of his favourite recreations was sailing, and for years he might be seen dodging the heavy traffic on the swift tides of the lower Thames, even in dirty weather. Some years ago, while sailing on the Norfolk Broads, he suffered a perforation of a duodenal ulcer for which he underwent operation five hours later at the Norfolk and Norwich Hospital. With similar courage he submitted to the severe operation which

(*Continued at foot of next page.*)

PANEL AND CONTRACT PRACTICE

R.M.O. and Sick Visitor.

THERE was a time when the regional staff of the Ministry of Health was overwhelmed with references from approved societies as to whether such and such an insured member was not fit for work or at all events disqualified from drawing medical benefit. The approved societies are naturally jealous of their funds which, as everyone knows, have been seriously depleted in the last three years, and have been more than a little jealous of their right to challenge any and every claim made upon these funds. The situation is becoming easier owing to a growing willingness on the part of many of the societies to coöperate with the Minister in selecting the cases which should be referred, guided by two investigations made last year into the incidence of excessive sickness claims. The sick visitor, appointed by the approved society, should be of real help to both sides, although there may be a tendency to be guided by the letter of the society's rules rather than the spirit of the Ministry's regulations. A society official may, for instance, claim to terminate the benefit of a tuberculous patient who takes a country walk on a summer's evening, because by these rules any member drawing benefit must be indoors by 7 P.M. Another may wish to penalise a woman barely convalescent from pneumonia who has left her home simply in her anxiety to inquire at the office why her benefit has been suspended. But coöperation is growing, and we read in the *National Insurance Gazette* for Jan. 17th of a scheme prepared with the idea of "drawing a series of nets" around all claims, so that every member sooner or later will be considered as a possible subject for reference to the R.M.O., and considered also just at the time when a reference is most likely to be effective.

Ordinary sick reports are not enough for this purpose, as certain members require special consideration at definite intervals, and the societies have been furnished with schedules of diseases with advice as to the period when a reference should be made. The first consideration, it is stated, is the examination of new claims where a reference to the R.M.O. is to be made before payment of benefit; into this class fall cases of pregnancy and post-partum debility. Apart from these, the first class to receive attention are those declaring on with what may be "trivial" diseases such as cold, coryza, epistaxis, cut finger, debility, vertigo, rheumatism, dyspepsia, and so forth. In these cases, where the applicant for benefit is under 25 years of age or a married woman, it is proposed to pass the first certificate back for immediate reference to the R.M.O.; if over 25 years of age, for the immediate issue of a special sick report form. The average duration of claims being slightly over four weeks for men and seven weeks for women it is proposed to ask for a sick report in respect of all claims lasting for these periods unless they have previously been referred.

SUMMARY.

	Mark.	Action.
First Certificates.		
1. Members declaring on the funds with illnesses in Schedule.		
Under 25 YEARS OF AGE, OR MARRIED WOMEN.	"R."	Refer to R.M.O. immediately.
Over 25 years of age.	"R.A."	Obtain special Sick Report immediately.
2. Members not coming under para. 1 declaring on who have three or more linked-up illnesses.	"R.1."	Obtain special Sick Report when 1st intermediate is received. Unless nature of incapacity suggests that a longer time be allowed.
3. Members not coming under para. 1 declaring on who have exhausted 13 or more weeks of sickness benefit.	"R.2."	Ditto.
Intermediate Certificates.		
4. Members who have drawn sickness benefit for 4 weeks (men) or 7 weeks (women) since declaring on, EXCEPT those referred under para. 2 or 3.	"R.3."	Obtain report at 4th or 7th week.
5. Members who have drawn sickness benefit for 13 weeks since declaring on, including any previously referred under paras. 1, 2 and 3.	"R.4."	Obtain report at 13th week.
6. Members who have been on disablement benefit for 27 weeks.	"R.5."	Obtain report at 27th week.

We reproduce here a model form of sick report which is intended to give the head office all the necessary particulars in anticipation of a reference to the R.M.O.

SPECIAL SICK REPORT.

Referred on.....
Name ..... Number..... No.....
Declared on..... with .....
Last Certificate at Head Office dated.....for.....
Date of birth.....Class....(women only) S.M. or W.....
Previously referred to R.M.O. for PRESENT INCAPACITY on.....
The secretary or (agent) is requested to return this form with the next certificate (intermediate or final) he receives attached to it, and to send in both AS SOON AS THE CERTIFICATE IS RECEIVED.
Member's present address (in full).....
.....
.....
Was member employed immediately before signing on?.....
If so, what was his/her occupation?.....
Has member work to go back to?.....
Date of your visit.....time.....
What was member doing then?.....
What is your opinion of the member's present condition?
.....
Able to go about?
Able to remain out of doors.
Confined to house?
Confined to bed.
Appearance.
(Signed).....

The Quality of Panel Service.

In Staffordshire, it seems, the view is still prevalent that insured persons do not get such good treatment or medicine as do private patients, and Dr. A. E. Hodder, chairman of the insurance committee, felt it his duty to lay this bogy at a recent meeting of the committee. It was a prejudice that died hard, although it ought, he thought, to have died by now. He emphasised again the fact that the medical practitioner in the treatment of his insured patients is not restricted in any way as to the drugs he should employ in his prescriptions. Although, he said, the approved societies were able and willing to help any of their members to formulate a complaint against the insurance doctor, there were in the course of the

(*Continued from previous page.*)

preceded his death. His cheerful optimism was maintained to the end."

By Dr. Turner's death the public health service of London has lost an able and distinguished servant, and his friends one who was admired for the depth and versatility of his attainments and the charm and upright sincerity of his character. Dr. Turner married Beatrice Hannah, daughter of W. H. Kendall, J.P., of Goadby, and leaves a widow but no children.

year scarcely more than 50 valid complaints among 15 million insured persons. When one of the committee ingeniously suggested that many more complaints would be made if it were not for the fact that panel patients feared the risk of antagonising their doctor, the chairman pointed out that in the vast majority of cases panel patients had the choice of two or more doctors, and that if they did not like the one on whose panel they were they could change to another. At the last meeting of the Preston Insurance Committee it was also found necessary to point out that there was no second quality of medicine; in repeated investigations made into complaints there had never been more than a little carelessness discovered. Test prescriptions had confirmed the accuracy of the dispensing and tests made by the Manchester Chamber of Commerce at its testing-house laboratory showed a decrease year by year in the percentage of dressings found to be of inferior quality.

Changing the Doctor.

At a meeting of the Middlesex Insurance Committee last month a resolution was carried in favour of requiring an insured person to give not less than one month's notice of his desire to change his doctor, exception being made if the doctor gave his consent or good cause was shown to justify immediate transfer. It was proposed that notice should, under normal conditions, take effect only at the end of each quarter. Mr. E. C. Farmer, vice-chairman of the committee, in moving the resolution, recalled the gradual curtailment in the notice required since the insurance scheme came into force—at first, one year; from 1920, six months; from 1924, no notice; since 1927, a fortnight. It was not only the doctors, he said, who were aware of pressure for certificates of incapacity in circumstances where incapacity no longer existed; it was all very well to say, how could a doctor sign a document which was untrue? The situation was a difficult one, and he thought it wise to make it a little less easy for the insured person to run across the street to a competitor to get the certificate which the first doctor had refused. Dr. H. B. Brackenbury, who followed, while admitting a certain amount of lax certification, thought the proposal would fail of its effect in so far as the motive would remain. But on the whole the committee agreed with Mr. Farmer that it was not all to the advantage of a patient to change his doctor as the outcome of some temporary annoyance.

A few weeks later the Staffordshire Insurance Committee, after some discussion, endorsed the Middlesex decision. The West Suffolk County Insurance Committee, on the other hand, is opposed to any extension of the restrictions on the right to change from one doctor to another at any time.

PARLIAMENTARY INTELLIGENCE

NOTES ON CURRENT TOPICS.

Pharmacy and Poisons Bill.

IN the House of Lords on Jan. 27th Earl RUSSELL (Under Secretary for India) moved that the second reading of the Pharmacy and Poisons Bill, which had been put down for that day, should be postponed *sine die*. He explained that the second reading could not be taken that day. He understood that a great many people were interested in the measure, but he was not able at present to name a day when it would be taken. He therefore proposed to let the Bill remain on the Order paper, and he would give as long notice as possible of the day when it was proposed to take the second reading.

The motion was agreed to.

HOUSE OF COMMONS.

THURSDAY, JAN. 22ND.

Progress of Slum-Clearance Schemes.

Mr. ALBERY asked the Minister of Health whether he could report any acceleration in slum-clearance schemes.—Mr. GREENWOOD replied: Yes, Sir. During the 11 years since the Armistice approximately 1000 houses have been demolished under improvement and reconstruction schemes undertaken by local authorities in England and Wales, while the 224 local authorities which have so far submitted programmes to me under the 1930 Act propose to demolish approximately 60,000 houses in clearance and improvement areas during the next five years.

Mr. MILLS asked the Minister of Health the county and local authorities which had scheduled any areas for slum clearance under the Housing (No. 2) Act.—Mr. GREENWOOD replied: I have been informed of 79 declarations made by 27 local authorities under Part I. of the Housing Act, 1930.

Alleged Sewerage Defects at Bournemouth.

Mr. D. G. SOMERVILLE asked the Minister of Health what action he was taking, in view of the representations made to him, respecting alleged defects in the sewerage system existing at Bournemouth and Poole as a result of the discharge of sewage into the sea.—Mr. GREENWOOD replied: This matter has been receiving my careful consideration in consultation with the local authorities concerned, who have been and are carrying out improvements at the sewage outfalls with a view to removing the causes of complaint. Further investigation will be made on the completion of these improvements.

Town-Planning of Built-up Areas.

Major NATHAN asked the Minister of Health when he anticipated being in a position to introduce his projected Bill relating to town-planning of built-up areas.—Mr. GREENWOOD replied: I hope that it will be found possible to introduce the Bill at an early date.

The Spahlinger Treatment.

Mr. MANDER asked the Minister of Health whether any experiments had been, or were being, carried out in connexion with the Spahlinger treatment of tuberculosis.—Mr. GREENWOOD replied: No such experiments have been, or are being, carried out by or in coöperation with my department.

Government and the Social Services.

Mr. BRACKEN asked the Prime Minister whether the Minister of Health's recent statement that he would not consider any reduction in social services represented the considered policy of His Majesty's Government.—Mr. MACDONALD replied: H.M. Government would not regard a contraction of efficiency in the existing social services as a desirable form of national economy.

State Medical Service.

Capt. PETER MACDONALD asked the Minister of Health whether, in connexion with his plans for a State maternity service, he intended to propose any reduction of the cash benefit for mothers.—Mr. GREENWOOD replied: The arrangements with regard to this subject are not yet sufficiently advanced to enable me to make any statement on the question raised by the hon. Member.

Improvements in London Cleansing.

Lieut.-Colonel FREMANTLE asked the Minister of Health what steps had been taken by the metropolitan borough councils to carry out the recommendations of the departmental committee on London cleansing as to the improvement of sanitary conditions at their refuse dumps; and whether he was satisfied that they would effect the improvement required.—Mr. GREENWOOD replied: I understand that the Metropolitan Boroughs' Standing Joint Committee have referred the Report of the Departmental Committee to the Metropolitan Sanitary Authorities, and that their replies will be considered at a meeting of the Standing Joint Committee on the 20th instant. I am not

at present in a position to answer definitely the questions of the hon. and gallant Member, but I am informed that two of the borough councils have entered into fresh contracts for the tipping of refuse on a new site under improved conditions.

Deaths from Tuberculosis.

Lieut.-Colonel FREMANTLE asked the Minister of Health the number of new cases of and the number of deaths from pulmonary and non-pulmonary tuberculosis notified in 1915, 1920, 1925, and 1929, respectively, and the estimated percentage of such cases attributable to infection of bovine origin.—Mr. GREENWOOD replied: The numbers asked for are shown in the following table:—

ENGLAND AND WALES.

Year.	Pulmonary tuberculosis.		Non-pulmonary tuberculosis.	
	New cases notified.	Deaths.	New cases notified.	Deaths.
1915	68,309	40,803	22,283	13,492
1920	57,844	32,791	15,488	9,754
1925*.. ..	60,770	32,382	20,667	8,005
1929*.. ..	57,274	31,425	18,682	6,565

* For the years 1925 and 1929 the figures include all new cases coming to the notice of medical officers of health, whether as a result of notification under the Public Health (Tuberculosis) Regulations or otherwise.

I am advised that there is no information available on which to base any reliable estimate of the numbers of these cases or deaths which were due to infection of bovine origin.

FRIDAY, JAN. 23RD.

The Case of Mrs. Olive Wise.

Mr. MCENTEE asked the Home Secretary whether he would consider arranging for the removal of Mrs. Olive Wise, of Walthamstow, from Holloway gaol to some private maternity home during the period of her confinement; whether he would give further sympathetic consideration to her case, with a view to her early release from prison; whether he would give consideration to the present state of the law, with a view to its modification, so that in future any female prisoner who was convicted of murder should not be sentenced to death if it was proved that she was pregnant; and if he would consider whether any amendment of the existing law was necessary to enable judges to assess the responsibility of the man in such cases and to ensure that where such responsibility was proved the woman would not be forced to bear all the punishment.—Mr. SHORT replied: As my hon. friend is aware, that sentence of death in this case has already, on the recommendation of my right hon. friend, been commuted to penal servitude and in due course my right hon. friend will consider very carefully whether, having regard to all the circumstances, he would be justified in recommending further clemency. He is advised that there is no power to order the removal of Mrs. Wise to a private maternity home during the period of her confinement. Proper provision is made in prison for the treatment of such prisoners and for their necessary care. With regard to the third part of the question, I would refer my hon. friend to the reply given yesterday. The last part of the question raises considerations of a far-reaching character with which it is impossible to deal within the limits of an answer to a question, and my right hon. friend will write to my hon. friend on the matter.

Production of Lymph from Rabbits.

Mr. FREEMAN asked the Minister of Health how many rabbits had been used in the preparation and production of vaccine lymph at the Government lymph establishment for each year since rabbits were first used for this purpose; and what was done with them after the experiments had been completed.—Mr. GREENWOOD replied: Between 100 and 200 rabbits are used annually for the purposes indicated in the question. The rabbits are killed as soon as these purposes have been fulfilled.

MONDAY, JAN. 26TH.

Kirkburton Mental Hospital.

Major COHEN asked the Minister of Pensions whether there was any possibility of the Kirkburton mental hospital being required by the West Riding authorities; and, if so, whether he would give an assurance that the pensioner patients at present in that hospital would not be returned to county mental institutions, but would be transferred to a Ministry institution where they would receive treatment exactly similar to that now being given at Kirkburton.—Mr. W. PALING (Lord of the Treasury), who replied, said: The answer to the first part of the question is in the affirmative. The policy of the Ministry as regards the type of case at present accommodated at Kirkburton remains unaltered and steps will be taken as occasion arises to make such similar arrangements as may be necessary for present and future patients who may be able to benefit by this form of treatment.

TUESDAY, JAN. 27TH.

The Washington Hours Convention.

Mr. GRAHAM WHITE asked the Prime Minister if it was the intention of the Government to proceed with the Bill to ratify the Washington Hours Convention. Mr. SNOWDEN (Chancellor of the Exchequer) replied: The Government wish to proceed with the Hours of Industrial Employment Bill, but my right hon. friend cannot say when the further stages of the Bill will be taken.

New Factory Legislation.

Mr. CHARLES WILLIAMS asked the Prime Minister on what day he proposed to introduce legislation to amend the Factory Acts.—Mr. SNOWDEN replied: My right hon. friend regrets that he cannot make any further statement on this subject.

Russian Timber and Public Health.

Sir WILLIAM DAVISON asked the Minister of Health whether instructions had been, or would be, given to officials of the Ministry at the ports concerned to inspect all imports into this country of Russian timber, including doors ready to be placed in houses, produced under insanitary conditions, in order to avoid danger to the public health by reason of insects bred in such conditions being imported with the timber.—Miss LAWRENCE (Parliamentary Secretary to the Ministry of Health) replied: The answer is in the negative. My right hon. friend is advised that there is no reason to apprehend danger to the public health from the importation of this timber.

Cost of Poor-law Infirmaries.

Dr. HASTINGS asked the Minister of Health the approximate cost per year of maintenance and treatment of the sick and infirm in the poor-law infirmaries.—Mr. GREENWOOD replied: The cost of poor-law relief in poor-law infirmaries for which separate accounts are kept, in the year ended March 31st, 1929 (the latest year for which particulars are available), was £5,379,000 approximately.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE.

Surg. Lt. C. Keating to be Surg. Lt.-Comdr.

Surg. Comdrs. W. Bradbury to R.M. Infirmary, Deal; H. E. R. Stephens to R.N. Hospital, Chatham; and W. F. Beattie to *Carlisle* and to *Cardiff*.

ROYAL NAVAL VOLUNTEER RESERVE.

Proby. Surg. Lt. R. St. J. Lyburn to be Surg. Lt.

ROYAL ARMY MEDICAL CORPS.

D. P. F. Mulvany is granted a temp. commn. in the rank of Lt.

TERRITORIAL ARMY.

Capt. J. Marshall to be Maj.

MILITIA.

Maj. D. Macfadyen retires on attaining the age-limit and retains the rank of Maj.

INDIAN MEDICAL SERVICE.

Capt. J. Carrey to be Maj.

Lt. L. G. Backhurst to be Capt. (prov.).

The provisional appts. of the undermentioned officers are confirmed: To be Capts.: J. McM. Wilder, E. G. Hurd-Wood, R. L. Frost, K. S. Fitch, and W. T. Taylor. To be Lts.: E. P. N. M. Early, W. McAdam, J. H. Gorman, S. M. Kharegat, D. H. Waldron, E. B. Eedle, and A. B. Guild.

Capt. M. D. Minhas relinquishes his temp. commn.

EXTENSION OF HARROW HOSPITAL.—The enlargements now in progress, which will cost £50,000, will increase the number of beds from 40 to 75. Particular attention is being given to devices for making the building sound-proof.

MEDICAL NEWS

University of Oxford.

On Jan. 22nd the following degrees were conferred:—

D.M.—P. N. B. Odgers and P. L. Gibson.

B.M.—B. T. Squires, R. T. V. Clarke, W. G. Rees, Rosalind V. Ferguson.

Dr. W. D. W. Brooks has been elected to a Fereday Fellowship at St. John's College.

University of Cambridge.

On Jan. 23rd the following degrees were conferred:—

M.B. and B.Chir.—Hermon Taylor, R. H. Dyer, B. C. Thompson, and F. H. Ward.

M.B.—A. J. Smyth.

B.Chir.—C. J. K. Hamilton and H. D. B. Kelly.

Society of Apothecaries of London.

At recent examinations the following candidates were successful:—

Surgery.—G. C. Brown, University of Cambridge and St. Mary's Hosp.; W. G. Kingston, Middlesex Hosp.; S. H. Thaler, Guy's Hosp.; and M. R. Tuteur Samuel, Universities of Freiburg and Manchester.

Medicine.—A. J. P. Coetzee, London Hosp.; D. R. Rigg, Univ. of Sheffield; and R. Schauder, King's Coll. Hosp.

Forensic Medicine, Hygiene, and Insanity.—A. J. P. Coetzee and C. L. Ferguson, London Hosp.; W. R. Packenham, Univ. of Oxford and St. Mary's Hosp.; and D. R. Rigg, Univ. of Sheffield.

Midwifery.—G. C. Brown, Univ. of Cambridge and St. Mary's Hosp.; and A. E. Mathews and A. W. Toussaint, St. Mary's Hosp.

The Baths of Dax.

The authorities of Dax, the thermal resort in the Pau-Biarritz district, where mud baths are a conspicuous feature, gave a dinner on Monday last, Jan. 26th, at the Savoy Hotel to a group of medical men at which the increasing amenities of their spa were fully detailed. The Dax organisation—the Société Immobilière et Fermière des Eaux Thermales et Minérales—was represented by its principal officers, while among others who supported Sir StClair Thomson in the chair was the French Consul-General in London and many well-known doctors. The prosperity of the spa was proposed in a bi-lingual speech from the chair, as Sir StClair Thomson was returning thanks for the guests to their French hosts; after which Dr. Leonard Williams gave a short discourse, with cinema illustrations, on the climate and waters of Dax and their therapeutic indications. Dr. Williams referred to the many patients who would benefit by sojourn in a spot so beautiful, so airy, and yet so sheltered as Dax, quite apart from their availing themselves of the elaborate arrangements made for universal poulticing in the soft alluvial mud of the Adour. The witty address was followed by an informal debate in which many of the company, hosts, and guests joined. The arrangements for the dinner were made by the Federation of the Health Resorts of France, from whom all information concerning hotel accommodation and railway travelling can be obtained through Mme. Jupp6-Blaise, at Tavistock House (North), London, W.C.

Royal Society of Medicine.

At a conversazione held at the house of the Society on Wednesday evening, Jan. 21st, Dr. Arnold Chaplin spoke an extempore piece, fully illustrated on the screen, in which he threw pleasant lights on the characters of a group of historic persons, concerning whose failings the world has made up its mind. Most of them were really great and nearly all occupied in their day, for different reasons, a highly important place in the eyes of their contemporaries. Starting with Theodora, Justinian's famous empress, the lecturer begged indulgence for her crimes on the score of her supreme courage. For Catherine the Great he made an apology, perhaps of a cynical sort but none the less telling; he excused her sexual vagaries on three grounds—namely, that her husband was a sot, that she pensioned off her lovers liberally, and that she introduced contemporary, especially French, literature into the Russian Court. The strength of Cromwell's character, and his astonishing aptitude as a general, displayed when a middle-aged amateur, were held by Dr. Chaplin to condone the Protector's faults; and Voltaire's genius, wit, and surpassing literary accomplishments were set out as more than compensating for any laxity of morals according to strict standards. To Madame Roland he accorded a moving tribute, and the Young Pretender he dismissed with contumely, adding a pictorial criticism of the "bonnie" Prince by showing his portrait in middle age. Running comments upon the Marquise du Châtelet, Voltaire's intimate, and the translator of Newton's Principia; upon William III., who defied the Catholic and all-powerful Louis XIV. as a leader in the Grand Alliance; and upon Georgina Duchess of Devonshire, who bought votes by her kisses from the electors of Westminster, completed a piquant address which closed with the question addressed to the audience—"Now, would you rather be weak and good or strong and bad?"

At the conclusion Sir StClair Thomson moved the thanks of the meeting to Dr. Chaplin for what he described as a "debunking" oration, the American adjective, as he explained, signifying the removal of bunk from a subject. Lord Dawson, deputising as President of the society for Dr. Watts Eden, said that the applause of the audience rendered it unnecessary to take a formal vote from the large attendance.

University of London.

University College.—Five lectures on The Modern Technique of Cytology are being given at the College by Prof. R. Chambers (New York), Dr. R. G. Canti, and Dr. R. J. Ludford, at 5 P.M. on Fridays, Jan. 30th and Feb. 6th, and Thursdays, Feb. 12th, 19th, and 26th.

University of Leeds.

Dr. A. St. G. Huggett has been appointed to the newly instituted Readership in Pharmacology within the Department of Physiology.

University of Manchester.

Dr. H. S. Raper, F.R.S., Brackenbury professor of physiology, has been appointed a Pro-Vice-Chancellor.

Royal College of Physicians of Edinburgh.

The Morison lectures will be given at the College by Dr. D. K. Henderson at 5 P.M., on Feb. 9th, 11th, and 13th. His subject will be Social Psychiatry.

British Institute of Philosophical Studies.

Prof. J. S. Haldane, F.R.S., will preside at a meeting to be held at University College, Gower-street, W.C., at 8.15 P.M. on Tuesday, Feb. 3rd, when Sir J. Arthur Thomson will lecture on Purpose in Evolution.

Wellcome Museum of Medical Science.

This museum is being rebuilt and will remain closed until further notice.

Glasgow Students' Collection.

The sum of £15,000 was realised by the Students Charities' Day collection. This was £2300 less than the record total of last year. Since 1921 Glasgow students by these efforts have raised £119,630.

Harry Stewart Hutchison Prize.

The University of Glasgow announce that this prize, of the value of about £50, for the best writing or writings embodying original research work in a branch of medical science relating to children will be awarded this year. Medical graduates (of not more than ten years' standing) of all British, home and colonial universities may be competitors. Compositions must be submitted in proper form to the Clerk of the Senate before March 31st, 1931.

Fires in Hospitals.

On Wednesday last week a fire occurred in the machinery room attached to the X ray department of the new Margate General Hospital which was opened in July last. The whole X ray machinery equipment was destroyed and the basement completely burned out, but no injury was done to the building above. The replacement of the installation will cost from £1500 to £2000.—A few days earlier a fire broke out in the diphtheria ward of the White Hoe Infectious Diseases Hospital, near Douglas, Isle of Man. There were ten patients in the ward, and the hospital was nearly full, most of the patients being children. The fire was quickly extinguished and there was no personal injury.

Hospitals as Panel Chemists.

The Eccles and Patricroft Hospital was recently incorporated with the object of obtaining power, under the Health Insurance Act, to recover expenses incurred in providing drugs, food, and bandages for panel patients. This can only be accomplished by a hospital which has been appointed panel chemists, and an unincorporated hospital is not qualified for such an appointment. Acting on counsel's opinion, the Lancashire County Insurance Committee has now declined to accede to the hospital's request to be registered as a body entitled to receive such payments. The refusal is, however, understood to be based upon a technical flaw in the hospital's Articles of Association, and when the flaw has been rectified another application is to be made in the interests of the voluntary hospitals generally.

A Haig Maternity Home.

A maternity home as a memorial to the late Lord Haig has recently been opened by Lady Haig at Hawick, in Roxburghshire. The home, which has cost £2000, has been given by Mr. Norman W. Grieve, a native of the district.

A Broadcast Appeal.

On a recent Sunday Sir Ernest Wild, Recorder of London, broadcast an appeal on behalf of St. Peter's Hospital for Stone in Henrietta-street, Covent Garden. Within a few days the hospital received 6600 letters containing a total of £1445.

Donations and Bequests

Among other bequests, the late Mr. Henry Lewis Doulton, of Putney Heath, and Ewhurst, Surrey, left £1500 to St. Thomas's Hospital; £1000 to the Royal Hospital for Incurables; £500 each to the Royal Hospital for Children and Women, Waterloo-road, and the Cancer Hospital, Brompton; and £100 to the Brompton Hospital for Consumption.—The trustees of the late Lady Cargill's estate have allocated £4000 to the Glasgow Royal Hospital for Sick Children, country branch; £3000 to the Glasgow Dental Hospital; £2000 to the East Park Home for Infirm Children; £1000 to the Glasgow Benevolent Society for the Relief of the Destitute Sick; £1000 to the Glasgow Royal Cancer Hospital; £500 to the Samaritan Society, Western Infirmary, Glasgow; and £500 to the Hospital for Sick Children, Glasgow.

Society of Apothecaries of London: Livery Dinner.

The Master of the Society of Apothecaries, Lt.-Col. C. T. Samman, presided on Tuesday last, Jan. 27th, over a Livery Dinner of the Society, the principal guests being the Lord Mayor of London, Sir William Phené Neal, and the Sheriffs. There was a large company present and the guests included many well-known persons.

After the loyal toasts the Master proposed the Lord Mayor and Sheriffs and the Corporation, adding that the toast did not require a syllable from him to commend it to the company. It was, he said, the first time for four years that the Lord Mayor had attended one of the Livery Dinners. The Lord Mayor, in his response, claimed for his office and for the government of the City of London a history of wise progress, so much so, that he, for his part, would hesitate to welcome any innovations without consulting the actions of his predecessors. Mr. Alderman and Sheriff Jenks, who also replied, confessed to not having realised previously the status of the Society as one of the qualifying medical bodies, an important position on which he offered his congratulations.

The presentation of the honorary diploma of the Society to Sir John Lynn Thomas, which followed, led to a description from the new licentiate of his professional career. Having declined the opportunity to succeed to his father's farm, and having, as he thought, a bent towards surgery, he served his time, in the old way, as an apprentice before starting to "walk the wards" of the London Hospital; and of his experiences at the outset he drew a vivid picture.

Prof. W. E. Dixon presented Mr. H. S. Wellcome, LL.D., to the Master as a recipient of the honorary freedom of the Society. He dwelt on Dr. Wellcome's patriotic actions at the outset of the war, when he placed the bureaux and laboratories of his firm at the disposal of the Government, organising also motor ambulances and flying hospitals. Dr. Wellcome was, said Prof. Dixon, a great medical and social benefactor. Dr. Wellcome, in reply, paid a tribute to the medical developments which marked the times, and which dated especially from the experiences gathered during the war. It was estimated, he said, that more lives were saved through the developments of medicine during the five years which followed the cessation of war, than had been lost during that struggle.

Dr. G. W. Cock then presented the Society with some pieces of early eighteenth century silver, in memory of the late Dr. George Wilks, a past master of the Society whose nieces, the Misses Lepard, were the donors.

The toast of the guests was proposed by Dr. Cecil Wall, Junior Warden of the Society, when Earl Russell replied.

INDEX TO "THE LANCET." VOL. II., 1930.

THE Index and Title-page to Vol. II., 1930, which was completed with the issue of Dec. 27th, is now ready. A copy will be sent gratis to subscribers on receipt of a post-card addressed to the Manager of THE LANCET, 7, Adam-street, Adelphi, W.C.2. Subscribers who have not already indicated their desire to receive Indexes regularly as published should do so now.

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

TUESDAY, Feb. 3rd.—5.30 P.M., ORTHOPÆDICS. (Cases at 4.30 P.M.) Cases will be shown.

WEDNESDAY.—5 P.M., HISTORY OF MEDICINE. Paper: Dr. Hubert J. Norman: Panel, Tuke, and Dacquin, and the Reform in the Treatment of the Insane. PSYCHIATRY: Members of this Section are cordially invited to attend. 8.30 P.M., SURGERY: PATHOLOGY. Special discussion on Indications for and the value of the Intravenous Use of Germicides. Openers: Mr. V. Zachary Cope and Mr. P. H. Mitchiner (Surgery); Dr. Alexander Fleming and Dr. T. H. C. Benians (Pathology). Other speakers will take part. THERAPEUTICS and MEDICINE: Members of these Sections are specially invited to attend and take part in the discussion.

THURSDAY.—8 P.M., TROPICAL DISEASES AND PARASITOLOGY: DISEASE IN CHILDREN. Special discussion on The Adaptation of European Women and Children to Tropical Climates. Openers: Dr. Aldo Castellani, K.C.M.G. (Hon.), and Dr. G. W. Bray (Tropical Diseases); Dr. A. R. Neligan and Dr. H. S. Stannus (Disease in Children). Other speakers will take part.

FRIDAY.—10.30 A.M., OTOLOGY (Cases at 9.30 A.M.). Discussion: Tuberculosis of the Ear. Openers: Sir StClair Thomson and Mr. F. C. Ormerod. Cases and specimens will be shown by Mr. A. R. Tweedie, Mr. W. M. Mollison, Mr. H. A. Kisch, Mr. F. C. Ormerod, Sir James Dundas-Grant, and others. 4.30 P.M., LARYNGOLOGY (Cases at 3.30 P.M.). Members are asked to note the alteration in the time of this and all future meetings. Discussion: Frontal Sinusitis and Its Treatment. Papers by Dr. J. S. Fraser and Dr. J. P. Stewart, Mr. Douglas Harmer and Mr. Bedford Russell, Mr. Walter Howarth. Illustrative cases and specimens will be shown by the above and by Mr. H. A. Kisch, Mr. V. E. Negus, Mr. Musgrave Woodman and others. 8.30 P.M., ANÆSTHETICS. Paper: Mr. A. Dickson Wright: Spinal Analgesia, with Special Reference to Operations Above the Diaphragm.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY, West London Hospital, Hammersmith-road, W.

FRIDAY, Feb. 6th.—8.30 P.M, Discussion on Premature Senility, to be opened by Dr. H. H. Mills, followed by Dr. R. A. Young, Prof. F. G. Hobday, and Dr. Gordon Dewes.

LEEDS AND WEST RIDING MEDICO-CHIRURGICAL SOCIETY.

WEDNESDAY, Feb. 4th.—3.25 P.M. (at the Alexandra Picture House, Camp-road, Leeds), Dr. Ronald Canti: Cinematograph Demonstration of Living Tissue Cells Growing in Vitro.

ROYAL SOCIETY OF ARTS, John-street, Adelphi, W.C.

MONDAY, Feb. 2nd.—8 P.M., Prof. L. C. Martin, D.Sc.: Some Modern Developments in Microscopy (2).

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn-fields, W.C.

MONDAY, Feb. 2nd.—5 P.M., Prof. H. H. Woollard: The Potency of the Pharyngeal Entoderm.

WEDNESDAY.—5 P.M., Mr. T. P. Dunhill: Malignant Disease of the Thyroid Gland—The Relation of the Incidence and Spread to its Embryology and Prognosis.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, Feb. 2nd, to SATURDAY, Feb. 7th.—MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square. Mon., 4 P.M., free lecture by Mr. Ernest Miles: Cancer of Colon and Rectum.—ST. MARK'S HOSPITAL, City-road, E.C. Thurs., 5 P.M., Free demonstration by Mr. E. T. C. Milligan: Diagnosis of Diseases of Rectum and Colon.—MAUDSLEY HOSPITAL, Denmark-hill, S.E. Fri., 2 P.M., free demonstration by Dr. J. S. Harris (Psychological Medicine).—ROYAL WATERLOO HOSPITAL, Waterloo-road, S.E. Fri., 4.30 P.M., lecture by Mr. Rodney Maingot: General Routine before Abdominal Operations. First of four lectures.—CHELSEA HOSPITAL FOR WOMEN, Arthur-street S.W. Special Course in Gynæcology. Mornings and/or afternoons.—PRINCE OF WALES'S GENERAL HOSPITAL, Tottenham. Intensive Course. Second week.—Further particulars from the Fellowship of Medicine.

KING'S COLLEGE, Strand, W.C.

MONDAY, Feb. 2nd.—5.30 P.M., Prof. J. Barcroft: Constancy of the Internal Environment (2).

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL, Denmark-hill, S.E.

THURSDAY, Feb. 5th.—9 P.M., Dr. Kinnier Wilson: Epilepsy, Its Variants and Their Treatment.

UNIVERSITY COLLEGE MEDICAL SCHOOL, University-street, W.C.

TUESDAY, Feb. 3rd.—5.15 P.M., Dr. W. Cramer: Filtrable Tumours.

CHARING CROSS HOSPITAL MEDICAL SCHOOL, Agar-street, W.C.
SUNDAY, Feb. 1st.—10.30 A.M., Mr. Eric A. Crook: Recent Advances in Surgery. 11.45 A.M., Dr. W. J. Adie: Early Diagnosis of Common Organic Nervous Diseases.

LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE (Public Health Division), Keppel-street, Gower-street, W.C.
MONDAY, Feb. 2nd.—5 P.M., Mr. J. C. Dawes: Public Cleansing. Composition and Storage of House and Trade Refuse.
WEDNESDAY.—5 P.M., Dr. W. G. Savage: Food Poisoning.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.
MONDAY, Feb. 2nd.—2.30 to 5 P.M.: Medical, Surgical, and Gynæcological Clinics. Operations.
TUESDAY.—2.30 to 5 P.M.: Medical, Surgical, Ear, Nose, and Throat Clinics. Operations.
WEDNESDAY.—2.30 to 5 P.M.: Medical, Skin, and Eye Clinics. Operations.
THURSDAY.—11.30 A.M.: Dental Clinics. 2.30 to 5 P.M.: Medical, Surgical, Throat and Ear Clinics. Operations.
FRIDAY.—10.30 A.M.: Ear, Nose, and Throat Clinics. 2.30 to 5 P.M.: Medical, Surgical, and Children's Diseases Clinics. Operations.

NATIONAL HOSPITAL, Queen-square.
MONDAY, Feb. 2nd.—12 noon, Dr. Greenfield: Neuropathology. Diseases of the Nerve Cell. 2 P.M., Dr. Riddoch: Out-patient Clinic. 3.30 P.M., Dr. Symonds: Intracranial Complications of Otitis and Sinusitis.
TUESDAY.—2 P.M., Dr. Walshe: Out-patient Clinic. 3.30 P.M., Dr. Adie: The Treatment of Epilepsy.
WEDNESDAY.—2 P.M., Dr. Martin: Out-patient Clinic.
THURSDAY.—2 P.M., Dr. Kinnier Wilson: Out-patient Clinic. 3.30 P.M., Dr. Critchley: Senile Tremor.
FRIDAY.—2 P.M., Dr. Adie: Out-patient Clinic. 3.30 P.M., Mr. Elmquist: Demonstration of Re-educative Exercises. (In Exercise Room.)

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.
TUESDAY, Feb. 3rd.—5 P.M., Dr. S. E. Dore: Affections of the Hair and Hair Follicles.
THURSDAY.—5 P.M., Dr. A. M. H. Gray: Xanthoma. Herpes.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C.
FRIDAY, Feb. 6th.—4 P.M., Mr. H. Kisch: The Use of Radium in the Throat, Nose, and Ear.

ROYAL NORTHERN HOSPITAL, Holloway-road, N.
TUESDAY, Feb. 3rd.—3.15 P.M., Dr. C. C. Beatty: Lecture.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James's Hospital, Ouseley-road, Balham, S.W.
WEDNESDAY, Feb. 4th.—4 P.M., Mr. V. Z. Cope: Demonstration of Surgical Cases.

CITY OF LONDON MATERNITY HOSPITAL, City-road, E.C.
THURSDAY, Feb. 5th—5 P.M., Mr. A. L. Walker: The Causes of Maternal Mortality.

HAMPSTEAD GENERAL AND NORTH-WEST LONDON HOSPITAL.
WEDNESDAY, Feb. 4th.—4 P.M., Dr. Rickwood Lane: Laboratory Investigation of Glycosuria.

Appointments

BOWER, MARGARET L., M.B., Ch.B. Edin., has been appointed Asst. Medical Officer for the Outer Isles of Inverness-shire.

HARVEY, W. C., M.D., Ch.B. Glasg., D.P.H., Medical Officer of Health and Superintendent of the Isolation Hospital, Southgate.

HORTON, R. LISTER, M.S. Lond., F.R.C.S. Eng., Honorary Surgeon to the Dorset County Hospital.

Queen Charlotte's Maternity Hospital, Marylebone-road, N.W: CAMBROOK, J. D., L.R.C.P. Lond., M.R.C.S., L.D.S., Honorary Dental Surgeon; JAMES, G. W. B., M.D., B.S.Lond., Honorary Psychiatrist; LEWIS, D., M.R.C.S., L.R.C.P. Lond., and SUNDERLAND, A., L.R.C.P.Lond., M.R.C.S., Hon. Anæsthetists.

Vacancies

For further information refer to the advertisement columns.

Alltrincham General Hospital.—Sen. and Jun. H.S.'s. At rate of £150 and £120 respectively.
Ashton-under-Lyne, District Infirmary.—H.S. At rate of £150.
Birmingham, City Babies Hospital, Cauwell Hall.—Res. M.O. At rate of £100.
Birmingham, Erdington House Poor-law Institution, &c.—Res. M.O. £850.
Birmingham and Midland Eye Hospital.—Res. Surg. O. £110.
Birmingham City Education Committee.—Director of Child Guidance Clinic and Special Schools M.O. £600–£700.
Bolton, Tournleys Hospital, Farnworth.—Asst. M.O. £225.
Bristol, City and County.—Asst. M.O. for Maternity and Child Welfare. £500.
Bristol City and County Mental Hospital.—Third Asst. M.O. £350.
Bristol Eye Hospital.—Res. H.S. £150.
Cancer Hospital, Fulham-road, S.W.—Physician.
Central London, Throat, Nose and Ear Hospital, Gray's Inn-road, W.C.—Res. H.S. At rate of £75.
Charing Cross Hospital, W.C.—Asst. Obstetric Physician. Also Asst. Cas. O. and Res. House Anæsthetist. £100.
Chester Royal Infirmary.—H.S. to Ear, Nose, and Throat Dept. £150.
City of London Hospital for Diseases of the Heart and Lungs, Victoria Park, E.—H.P. At rate of £100.
Derby, Derbyshire Royal Infirmary.—Two H.S.'s to Special Depts. Also Ophth. H.S. Each £150.
Dudley, Guest Hospital.—Asst. H.S. £160.
East London Hospital for Children and Dispensary for Women, Shadwell, E.—Surgeon to Nose, Throat, and Ear Dept.
Gloucestershire Royal Infirmary and Eye Institution.—2nd H.S. At rate of £120.
Great Yarmouth General Hospital.—Jun. H.S. £150.
Hospital for Sick Children, Great Ormond-street, W.C.—Refraction Asst. for Ophthalmic Dept. 1 gn. each attendance.
Inverness Royal Northern Infirmary.—H.S. At rate of £100.
Lincoln City.—Chief Asst. M.O.H. £600.
Madras Medical College and Vizagapatam Medical College.—Professorship of Anatomy. Rs. 1100 a month.
Maidstone, Institution for Mental Defectives, Leybourne Grange.—Res. Med. Supt. £700.
Manchester, Ancoats Hospital.—Res. M.O. £150. H.P. £100. Res. Surg. O. £200. Also Gen. H.S. £100.
Manchester, St. Mary's Hospitals.—Sen. Asst. M.O. for Children's Out-patient Dept. £100. Also Jun. Asst. M.O. £50.
Manchester, Royal Children's Hospital, Pendlebury.—Hon. Ophth. Surg.
Manchester Royal Infirmary.—H.S. for Central Branch, Roby-street. £100–£200.
Manchester Victoria Memorial Jewish Hospital, Cheetham.—Jun. H.S. At rate of £125.
Minehead and West Somerset Hospital, Minehead.—Res. H.S. At rate of £150.
Nelson Hospital, Merton, S.W.—Res. M.O. At rate of £100.
Nottingham and Midland Eye Infirmary.—Res. H.S. £200.
Oldham Royal Infirmary.—H.S.'s to Special Depts. Each at rate of £175.
Poole, Dorset, Cornelia and East Dorset Hospital.—H.S. At rate of £150.
Poplar Metropolitan Borough, Maternity and Child Welfare Clinics.—Part-time M.O. 1½ gns. per session.
Princess Louise Kensington Hospital for Children, St. Quintin-avenue, Kensington, W.—Hon. Asst. Dental Surgeon.
Rochdale Infirmary and Dispensary.—Jun. H.S. £200.
Royal Northern Hospital, Holloway, N.—Asst. Surg. O. £75. Obstet. H.S. and H.S. Each at rate of £70. Also Hon. Surg.
St. Bartholomew's Hospital, E.C.—Surgeon.
Salisbury General Infirmary.—H.S. £150.
Sheffield, Royal Hospital.—Ophth. H.S. £120. Also Res. Anæsthetist. £80–£100.
Sheffield Royal Infirmary.—H.S. At rate of £80.
Southport General Infirmary.—Sen. H.S. £200.
South Shields, Ingham Infirmary.—H.S. £150.
Stoke-on-Trent, North Staffordshire Royal Infirmary.—H.S. £150.
Swindon and North Wilts Victoria Hospital, Swindon.—M.O. £125.
Surrey County Council.—Asst. M.O. £600.
Uxbridge, Hillingdon Hospital.—Dispenser. £250.
Ventnor, Isle of Wight, Royal National Hospital for Consumption and Diseases of the Chest.—Asst. Res. M.O. At rate of £300.
Virginia Water, Surrey, Holloway Sanatorium.—Jun. Asst. M.O. £350.
Wallasey, Victoria Central Hospital.—Jun. H.S. At rate of £100.
West Bromwich and District General Hospital.—Hon. Physician and Hon. Surgeon. Also H.S., H.P., and Cas. H.S. All at rate of £200.
West Ham County Borough.—Jun. Asst. M.O. £500.
Wigan Royal Infirmary.—Third H.S. At rate of £150.

The Chief Inspector of Factories announces vacant appointments for Certifying Factory Surgeons at Dingwall (Ross and Cromarty), Rowfant (Sussex), Parbold (Lancs.), and at Margate (Kent).

Births, Marriages, and Deaths

BIRTHS.

POTTINGER.—On Dec. 15th, at Invercargill, New Zealand, the wife of David Pottinger, M.D. Ed., M.R.C.P. Lond., of a son.
SELBY.—On Jan. 24th, the wife of Dr. H. J. Selby, of Newnham-on-Severn, of a son.
TOWNEND.—On Jan. 20th, at Welbeck-street, the wife of R. D. M. Townend, M.R.C.S., L.R.C.P., of High-street, W., of a son.
TUNNICLIFFE.—On Jan. 22nd, the wife of S. L. Tunnicliffe, M.B., Ch.B., B.D.S., M.R.C.S., L.R.C.P., of Granby-street, Loughborough, Leicestershire, of a daughter.

MARRIAGES.

BATEMAN—TURNER.—On Jan. 15th, at St. Margaret's, Westminster, Geoffrey Hirst Bateman, B.M., B.Ch., to Margaret, only daughter of Samuel Turner, J.P., High Sheriff of Lancashire, and Mrs. Turner, of Bamford, nr. Rochdale.

DEATHS.

AMSDEN.—On Jan. 18th, at Seaview-terrace, Rye, Sussex, George Amsden, M.B. Edin., late Medical Superintendent Essex County Mental Hospital, in his 85th year.
CÆSAR.—On Jan. 16th, at Clapton-in-Gordano, Somerset, Richard Thompson Cæsar, M.C., M.R.C.S. Eng., L.R.C.P. Lond.
MARSHALL.—On Jan. 24th, at Beverley, Chorley New-road, Bolton, John Dodds Marshall, D.S.O., M.C., Ch.B.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages and Deaths.

NOTES, COMMENTS, AND ABSTRACTS

"WHAT TO DO IF IT'S CATCHING."

UNDER this catching title Messrs. Newton Chambers and Co., Ltd., have published, at the modest price of 1*s*., a compilation, to which, we are informed, medical and sanitary specialists have contributed, and which places in the hands of the public the elementary rules for the domestic dealing with infectious diseases. So far as this is possible or useful, having regard alike to the need for brevity and the nature of the audience, the authors have given correct reasons for the advice which they offer, thus showing that the scientific coöperation claimed has been real. The technical staff of the firm working under such advice have, in fact, produced a small and cheap book, consultation of which by the public should clear up much of the perplexities which exist in the lay mind concerning the origin, prevalence, and prevention of infectious disease; as a result of the lessons here given the general population should be able to assist intelligently in the promotion of health under the advice of the medical profession. There is nothing novel whatever in the teaching, but the selection and arrangement of the material should make learning easy.

After an appeal to commercial prudence by pointing out the expense incurred through the spread of sickness, the first section of the book indicates how the doctor, and, where necessary, the sanitary authority, can play their parts in the maintenance of public health. The prudent note is made here that the seriousness of many common and general illnesses should not be estimated by the immediate effects, which, as far as mortality statistics go, may not appear to be sinister, but by their after-effects, which bulk largely in many special directions. The part played by specific germs, and the consequent necessity of preventing their spread, is set out succinctly, and there follows a synopsis of the more obvious signs of common complaints in their earliest stages, which bears the mark of well-informed care. This section closes with the assumption that the medical man has been called in, when the sound suggestion is added that he should be asked—Can this illness spread to other members of the household, and, if so, is removal to a hospital or complete isolation necessary, or can a modified form of semi-isolation in the home be employed? The chapter in which the plan for "semi-isolation" is put out is very interesting. The familiar rules for sick-room arrangements and disinfection are fully laid down; they insure that the sufferer should be kept as far as possible from contact with the family and that, when such contact takes place, certain precautions to prevent the spread of infection should be observed. The stricter regulations to be followed by all members of the household when the patient is in complete isolation summarises advice that the doctor usually gives in such circumstances, but the clear and emphatic language employed should be helpful in ensuring an orderly and inclusive attention to the many things that have to be thought of. The verbal instructions of the medical attendant will be recalled, and therefore followed with the aid of this categorical list. A tabular statement as to the accepted periods of incubation of the main group of infectious diseases is then followed by indications of the period during which quarantine and isolation should be enforced, while wise recommendations as to the treatment of the patient, after the medical declaration that he is well enough to leave the sick room, are added.

Other sections of the book deal with first-aid in the home, lay down precepts of personal hygiene, and give household hints of various sorts to those responsible for the domestic care of the sick. Attractive little pictures break up the text throughout, and will certainly act as aids to memory.

WOUNDS AND MAGGOTS.

SUPPLEMENTING the leading article on this subject in THE LANCET of Dec. 13th, 1930 (p. 1301), Dr. Hyman I. Goldstein (New Jersey, U.S.A.) writes: Dr. W. S. Baer, of Johns Hopkins Medical School, addressed the Interstate Post-graduate Assembly of North America at Detroit (Oct. 25th, 1929) on the subject of "Viable Antiseptic in Chronic Osteomyelitis." Baer had seen two wounded soldiers in France get well as the result of maggots filling the wounds. He "mulled the problem over in his head for ten years," and he then decided to try out this maggot treatment in some cases of chronic osteomyelitis, not cured by several operations and various chemical "sterilising" agents. All of the 21 cases, both of compound fractures and ordinary chronic osteomyelitis of most bones of the human body, got well under the maggot treatment. He believes maggots kill off gas-bacillus infection. But Baer evidently was unaware of the use of maggots by Baron Larrey during the Napoleonic wars, and makes no reference to Larrey's Clinical Surgery, nor to Malgaigne or Packard. Maggots were being used in Madrid in August, 1929, when I visited the hospital there with the Spanish resident surgeon. Baer, while stating that maggots will kill the gas bacillus, does not mention tetanus spores. Sterile maggots, however, are now being grown.

REFERENCES.

Baer, W. S.: Proc. Interstate Postgrad. Med. Assoc. of North America, 1929, v., 370.

Larrey, D. J.: Clinique Chirurgicale, vol. i., pp. 51-52, Paris, 1829.

Malgaigne, J. F.: Treatise on Fractures, vol. i., p. 271, Paris, 1847.

Packard, J. H.: Treatise on Fractures (Malgaigne), p. 221, Philadelphia, 1859.

THE MYSTERY OF LIFE.

A FILM now being shown at the Rialto Theatre, in Coventry-street, London, opens with some fantastic pictures showing our own solar system separating from stellar matter. The evolution of animal life is then traced from amœba to primitive man through different types of aquatic and terrestrial animals. The call of sex is introduced with examples of mating, of selection of the fit, and of the urge to carry on the race. Human ontogeny from the conjugation of ovum and spermatozoön up to the birth of the fœtus is set out in rapid sequence. Here one cannot help feeling that the story is insufficiently clear and full. The film, in fact, just loses the opportunity of being great. If, while retaining its directness and simplicity, it were revised so as to present the story in a more logical sequence, it might well prove to be one of the real educational agents of our time. Prof. Julian Huxley's name is mentioned as its instigator, and we could have wished that his help had been secured in the production.

ENGAGEMENTS IN ADVANCE.

FROM the Lecture Agency, Ltd., the Outer Temple, Strand, London, W.C., we have received a copy of the Advance Date Book, which will be found useful by all who have to make a note of their engagements some time before their performance. Bound in leather and conveniently small, the diary is ruled so that the entries for a month appear on one page with the facing page left blank for remarks. In this way the period from July, 1931, to June, 1933, is covered, while there are preliminary spaces for brief entries up to June, 1931. The diary is accompanied by calendars dealing with the three years following June, 1931, while the feasts and anniversaries are indicated for four years. There is space at the end of the diary for memoranda and accounts, and the price of the book is 3*s*. 6*d*. post free.